

encoded protein. AT340_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AT340_1 protein").

The partial nucleotide sequence of AT340_1, including its 3' end and a poly(A) tail, as presently determined is reported in SEQ ID NO:114. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:115. The predicted amino acid sequence of the AT340_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:115. Amino acids 12 to 24 of SEQ ID NO:115 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 25. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the AT340_1 protein. Additional nucleotide sequence from the 5' portion of AT340_1 is reported in SEQ ID NO:113.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AT340_1 should be approximately 1100 bp.

The nucleotide sequence disclosed herein for AT340_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. AT340_1 demonstrated at least some similarity with sequences identified as AA039343 (zk39g04.s1 Soares pregnant uterus NbHPU Homo sapiens cDNA clone 485238 3'), R68951 (yi43g06.r1 Homo sapiens cDNA clone 142042 5' similar to SP:C35D10.1 CE01190), R77532 (yi76c01.r1 Homo sapiens cDNA), R92619 (yq04a04.r1 Homo sapiens cDNA clone 195918 5' similar to SP:C35D10.1 CE01190), and W60997 (zc99f09.s1 Pancreatic Islet Homo sapiens cDNA clone 339305 3'). The predicted amino acid sequence disclosed herein for AT340_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted AT340_1 protein demonstrated at least some similarity to sequences identified as U21324 (similar to *S. cerevisiae* hypothetical protein YKL166 [*Caenorhabditis elegans*]). Based upon sequence similarity, AT340_1 proteins and each similar protein or peptide may share at least some activity.

Clone "BG132_1"

A polynucleotide of the present invention has been identified as clone "BG132_1". BG132_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BG132_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BG132_1 protein").

The nucleotide sequence of the 5' portion of BG132_1 as presently determined is reported in SEQ ID NO:116. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:117. The predicted amino acid sequence of the BG132_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:117.

- 5 Amino acids 121 to 133 of SEQ ID NO:117 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 134. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the BG132_1 protein. Additional nucleotide sequence from the 3' portion of BG132_1, including a poly(A) tail, is reported in SEQ ID NO:118.
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The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BG132_1 should be approximately 2000 bp.

- The nucleotide sequence disclosed herein for BG132_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BG132_1 demonstrated at least some similarity with sequences identified as
- 15 AA078587 (7P05H12 Chromosome 7 Placental cDNA Library Homo sapiens cDNA clone 7P05H12), H14301 (ym63c04.r1 Homo sapiens cDNA clone 163590 5' similar to gb:U03642_cds1 PROBABLE G PROTEIN-COUPLED RECEPTOR APJ (HUMAN)), L09249 (putative G-protein coupled receptor, rhodopsin family), S79811 (adrenomedullin receptor [rats, lung, mRNA]), T36034 (rchd523 gene differentially expressed in cardiovascular disease), U58828
- 20 (Human IL8-related receptor (DRY12)mRNA, complete cds), and Y08162 (H.sapiens mRNA for heptahelix receptor). The predicted amino acid sequence disclosed herein for BG132_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BG132_1 protein demonstrated at least some similarity to
- 25 sequences identified as L06109 (G protein-coupled receptor [Gallus gallus]), L34339 (galanin receptor [Homo sapiens]), U30290 (galanin receptor GALR1 [Rattus norvegicus]), U58828 (IL8-related receptor [Homo sapiens]), W03739 (rchd523 gene product (G protein-coupled receptor)), X98510 (G protein-coupled receptor [Homo sapiens]), and Y08162 (heptahelix receptor [Homo sapiens]). Based upon sequence similarity, BG132_1 proteins and each similar
- 30 protein or peptide may share at least some activity.

Clone "BG219_2"

- A polynucleotide of the present invention has been identified as clone "BG219_2". BG219_2 was isolated from a human adult brain cDNA library using methods which are selective
- 35 for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding

a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BG219_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BG219_2 protein").

5 The nucleotide sequence of BG219_2 as presently determined is reported in SEQ ID NO:119, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BG219_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:120.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BG219_2 should be approximately 700 bp.

10 The nucleotide sequence disclosed herein for BG219_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BG219_2 demonstrated at least some similarity with sequences identified as AA210695 (zr88b05.s1 Soares NbHTGBC Homo sapiens cDNA clone 682737 3'), C01459 (HUMGS0008450, Human Gene Signature, 3'-directed cDNA sequence), N22628 (EST49p115
15 Homo sapiens cDNA clone 49p115), and T26211 (Human gene signature HUMGS08450). Based upon sequence similarity, BG219_2 proteins and each similar protein or peptide may share at least some activity.

Clone "BG366_2"

20 A polynucleotide of the present invention has been identified as clone "BG366_2". BG366_2 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BG366_2 is a full-length clone, including the entire coding sequence of
25 a secreted protein (also referred to herein as "BG366_2 protein").

The nucleotide sequence of BG366_2 as presently determined is reported in SEQ ID NO:121, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BG366_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:122. The amino acid sequence of
30 another protein that could be encoded by BG366_2 is reported in SEQ ID NO:283.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BG366_2 should be approximately 3000 bp.

The nucleotide sequence disclosed herein for BG366_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
35 protocols. BG366_2 demonstrated at least some similarity with sequences identified as N39453

(yy49h03.s1 Homo sapiens cDNA clone 276917 3'). Based upon sequence similarity, BG366_2 proteins and each similar protein or peptide may share at least some activity. The TopPredII computer program predicts a potential transmembrane domain within the BG366_2 protein sequence centered around amino acid 92 of SEQ ID NO:122.

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Clone "BV172_2"

A polynucleotide of the present invention has been identified as clone "BV172_2". BV172_2 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
10 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BV172_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BV172_2 protein").

The nucleotide sequence of BV172_2 as presently determined is reported in SEQ ID NO:123, and includes a poly(A) tail. What applicants presently believe to be the proper reading
15 frame and the predicted amino acid sequence of the BV172_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:124.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BV172_2 should be approximately 1650 bp.

The nucleotide sequence disclosed herein for BV172_2 was searched against the GenBank
20 and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BV172_2 demonstrated at least some similarity with sequences identified as No significant hits were found in the database. The TopPredII computer program predicts a potential transmembrane domain within the BV172_2 protein sequence centered around amino acid 19 of SEQ ID NO:124. The nucleotide sequence of BV172_2 indicates that it may contain one or more
25 of the following types of repetitive elements: an element similar to chicken CR1, human L1, Mer33.

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Clone "CC247_10"

A polynucleotide of the present invention has been identified as clone "CC247_10". CC247_10 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino

acid sequence of the encoded protein. CC247_10 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CC247_10 protein").

The nucleotide sequence of CC247_10 as presently determined is reported in SEQ ID NO:125, and includes a poly(A) tail. What applicants presently believe to be the proper reading
5 frame and the predicted amino acid sequence of the CC247_10 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:126. Amino acids 1 to 8 of SEQ ID NO:126 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 9. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be
10 separated from the remainder of the CC247_10 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CC247_10 should be approximately 550 bp.

The nucleotide sequence disclosed herein for CC247_10 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA
15 search protocols. CC247_10 demonstrated at least some similarity with sequences identified as AA291226 (zs47d03.r1 NCI_CGAP_GCB1 Homo sapiens cDNA clone 700613 5'), T05738 (EST03627 Homo sapiens cDNA clone HFBDF64), W51195 (ma14b04.r1 Life Tech mouse brain Mus musculus cDNA clone 304495 5'), and W93640 (zd95d09.s1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 357233 3'). The predicted amino acid sequence disclosed herein for
20 CC247_10 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CC247_10 protein demonstrated at least some similarity to sequences identified as M62424 (thrombin receptor [Homo sapiens]). The predicted CC247_10 protein is highly hydrophobic. Based upon sequence similarity, CC247_10 proteins and each similar protein or peptide may share at least some activity.

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Clone "CI480_9"

A polynucleotide of the present invention has been identified as clone "CI480_9". CI480_9 was isolated from a human adult brain cDNA library using methods which are selective
30 for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CI480_9 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CI480_9 protein").

The nucleotide sequence of CI480_9 as presently determined is reported in SEQ ID
35 NO:127, and includes a poly(A) tail. What applicants presently believe to be the proper reading

frame and the predicted amino acid sequence of the CI480_9 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:128. Amino acids 39 to 51 of SEQ ID NO:128 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 52. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CI480_9 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CI480_9 should be approximately 1940 bp.

The nucleotide sequence disclosed herein for CI480_9 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CI480_9 demonstrated at least some similarity with sequences identified as N99342 (IMAGE:20093 Homo sapiens cDNA clone 20093), R89725 (ym99d09.r1 Homo sapiens cDNA clone 167057 5'), and U60644 (Human HU-K4 mRNA, complete cds). The predicted amino acid sequence disclosed herein for CI480_9 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CI480_9 protein demonstrated at least some similarity to sequences identified as U60644 (HU-K4 [Homo sapiens]). Based upon sequence similarity, CI480_9 proteins and each similar protein or peptide may share at least some activity.

CI480_9 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 63 kDa was detected in membrane fractions using SDS polyacrylamide gel electrophoresis.

Clone "CO722_1"

A polynucleotide of the present invention has been identified as clone "CO722_1". CO722_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CO722_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CO722_1 protein").

The nucleotide sequence of CO722_1 as presently determined is reported in SEQ ID NO:129, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CO722_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:130. Amino acids 17 to 29 of SEQ ID NO:130 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 30. Due to the hydrophobic nature of the predicted leader/signal

sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CO722_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CO722_1 should be approximately 6800 bp.

5 The nucleotide sequence disclosed herein for CO722_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CO722_1 demonstrated at least some similarity with sequences identified as AA186616 (zp71a08.s1 Stratagene endothelial cell 937223 Homo sapiens cDNA clone 625622 3' similar to contains Alu repetitive element), H10376 (ym08a03.s1 Homo sapiens cDNA clone 10 47067 3'), N86013 (J5997F Fetal heart, Lambda ZAP Express Homo sapiens cDNA), U55258 (Human hBRAVO/Nr-CAM precursor (hBRAVO/ Nr-CAM) gene, complete cds), W19770 (zb39d01.r1 Soares parathyroid tumor NbHPA Homo sapiens), W31608 (zb91d09.r1 Soares parathyroid tumor NbHPA Homo sapiens cDNA clone), and X58482 (Chicken mRNA for neuronal transmembrane protein Nr-CAM, ng-CAM related). The predicted amino acid sequence 15 disclosed herein for CO722_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CO722_1 protein demonstrated at least some similarity to sequences identified as AB002341 (KIAA0343 [Homo sapiens]) and X58482 (Nr-CAM protein [Gallus gallus]). Based upon sequence similarity, CO722_1 proteins and each similar protein or peptide may share at least some activity. The 20 TopPredII computer program predicts two potential transmembrane domains within the CO722_1 protein sequence, centered around amino acids 610 and 1070 of SEQ ID NO:130, respectively.

CO722_1 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 160 kDa was detected in conditioned media fractions using SDS polyacrylamide gel electrophoresis.

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Clone "CT748_2"

A polynucleotide of the present invention has been identified as clone "CT748_2". CT748_2 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding 30 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CT748_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CT748_2 protein").

The nucleotide sequence of CT748_2 as presently determined is reported in SEQ ID NO:131, and includes a poly(A) tail. What applicants presently believe to be the proper reading 35 frame and the predicted amino acid sequence of the CT748_2 protein corresponding to the

foregoing nucleotide sequence is reported in SEQ ID NO:132. Amino acids 281 to 293 of SEQ ID NO:132 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 294. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CT748_2 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CT748_2 should be approximately 5500 bp.

The nucleotide sequence disclosed herein for CT748_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CT748_2 demonstrated at least some similarity with sequences identified as T48063 (yb24f03.s1 Homo sapiens cDNA clone 72125 3') and X54175 (Human specific Alu element (HS C4N2) DNA). The predicted amino acid sequence disclosed herein for CT748_2 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CT748_2 protein demonstrated at least some similarity to sequences identified as Z36714 (cyclin F [Homo sapiens]). Based upon sequence similarity, CT748_2 proteins and each similar protein or peptide may share at least some activity. The nucleotide sequence of CT748_2 indicates that it may contain an Alu repetitive element.

Clone "AJ1_1"

A polynucleotide of the present invention has been identified as clone "AJ1_1". AJ1_1 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AJ1_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AJ1_1 protein").

The nucleotide sequence of the 5' portion of AJ1_1 as presently determined is reported in SEQ ID NO:133. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:134. The predicted amino acid sequence of the AJ1_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:134. Additional nucleotide sequence from the 3' portion of AJ1_1, including a poly(A) tail, is reported in SEQ ID NO:135.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AJ1_1 should be approximately 925 bp.

The predicted amino acid sequence disclosed herein for AJ1_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The

predicted AJ1_1 protein demonstrated at least some similarity to sequences identified as U39060 (GRIP1 [Mus musculus]). Based upon sequence similarity, AJ1_1 proteins and each similar protein or peptide may share at least some activity.

5 Clone "AQ73_3"

A polynucleotide of the present invention has been identified as clone "AQ73_3". AQ73_3 was isolated from a human adult ovary (PA-1 teratocarcinoma, untreated tissue pooled with retinoic-acid-treated and activin-treated tissue) cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified
10 as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AQ73_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AQ73_3 protein").

The nucleotide sequence of AQ73_3 as presently determined is reported in SEQ ID NO:136, and includes a poly(A) tail. What applicants presently believe to be the proper reading
15 frame and the predicted amino acid sequence of the AQ73_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:137.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AQ73_3 should be approximately 2800 bp.

The nucleotide sequence disclosed herein for AQ73_3 was searched against the GenBank
20 and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. AQ73_3 demonstrated at least some similarity with sequences identified as AA514474 (nf57g01.s1 NCI_CGAP_Co3 Homo sapiens cDNA clone 924048), T47520 (Human hepatoma-derived growth factor (HDGF-2) cDNA), W24708 (zb62e08.r1 Soares fetal lung NbHL19W Homo sapiens cDNA clone 308198 5'), and W45513 (zc27g08.s1 Soares senescent
25 fibroblasts NbHSF Homo sapiens cDNA clone 323582 3'). The predicted amino acid sequence disclosed herein for AQ73_3 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted AQ73_3 protein demonstrated at least some similarity to sequences identified as D16431 (hepatoma-derived GF [Homo sapiens]), D63707 (mouse hepatoma derived growth factor (HDGF) [Mus musculus]), R66727 (Human
30 hepatoma derived growth factor), U18997 (ORF_f299 [Escherichia coli]), U97193 (similar to S. cerevisiae SIR2 (SP P06700) and mouse hepatoma derived growth factor HDGF (NID g945418) [Caenorhabditis elegans]), and W09404 (Human hepatoma-derived growth factor (HDGF-2)). Based upon sequence similarity, AQ73_3 proteins and each similar protein or peptide may share at least some activity.

AQ73_3 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 67 kDa was detected in membrane fractions using SDS polyacrylamide gel electrophoresis.

5 Clone "BG142_1"

A polynucleotide of the present invention has been identified as clone "BG142_1". BG142_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence
10 of the encoded protein. BG142_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BG142_1 protein").

The nucleotide sequence of BG142_1 as presently determined is reported in SEQ ID NO:138, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BG142_1 protein corresponding to the
15 foregoing nucleotide sequence is reported in SEQ ID NO:139.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BG142_1 should be approximately 1100 bp.

The nucleotide sequence disclosed herein for BG142_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
20 protocols. BG142_1 demonstrated at least some similarity with sequences identified as AA170261 (ms87h11.r1 Soares mouse 3NbMS Mus musculus cDNA clone 618597 5' similar to TR E245601 E245601 G-RICH BOX-BINDING PROTEIN), L04282 (Human CACCC box-binding protein mRNA, complete cds), N27696 (yx51h12.r1 Homo sapiens cDNA clone 265319 5'), W96110 (ze09a11.r1 Soares fetal heart NbHH19W Homo sapiens cDNA clone
25 358460 5'), and W96111 (ze09a11.s1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 358460 3'). The predicted amino acid sequence disclosed herein for BG142_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BG142_1 protein demonstrated at least some similarity to sequences identified as U80078 (transcription factor BFCOL1 [Mus musculus]) and X98096 (G-rich
30 box-binding protein [Mus musculus]). Based upon sequence similarity, BG142_1 proteins and each similar protein or peptide may share at least some activity.

Clone "BV66_1"

A polynucleotide of the present invention has been identified as clone "BV66_1".
35 BV66_1 was isolated from a human adult brain cDNA library using methods which are selective

for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BV66_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BV66_1 protein").

5 The nucleotide sequence of BV66_1 as presently determined is reported in SEQ ID NO:140, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BV66_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:141.

10 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BV66_1 should be approximately 870 bp.

 The nucleotide sequence disclosed herein for BV66_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database. The nucleotide sequence of BV66_1 indicates that it may contain a TAAA1 simple repeat element.

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Clone "BV291_3"

 A polynucleotide of the present invention has been identified as clone "BV291_3". BV291_3 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
20 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BV291_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BV291_3 protein").

 The nucleotide sequence of BV291_3 as presently determined is reported in SEQ ID NO:142, and includes a poly(A) tail. What applicants presently believe to be the proper reading
25 frame and the predicted amino acid sequence of the BV291_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:143.

 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BV291_3 should be approximately 2000 bp.

 The nucleotide sequence disclosed herein for BV291_3 was searched against the GenBank
30 and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BV291_3 demonstrated at least some similarity with sequences identified as H10954 (ym06e09.r1 Homo sapiens cDNA clone 47034 5'), H10955 (ym06e09.s1 Homo sapiens cDNA clone 47034 3'), N25300 (yw52c10.s1 Homo sapiens cDNA clone 255858 3'), T25940 (Human gene signature HUMGS08173), T68890 (yc30g11.s1 Homo sapiens cDNA clone 82244 3'),
35 T78286 (yc99a08.r1 Homo sapiens cDNA clone 24033 5'), Z39987 (H. sapiens partial cDNA

sequence; clone c-1oh05), and Z47073 (*Caenorhabditis elegans* cosmid ZC506). The predicted amino acid sequence disclosed herein for BV291_3 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BV291_3 protein demonstrated at least some similarity to sequences identified as X02155
5 (BTGR_1 thyroglobulin [*Bos taurus*]). Based upon sequence similarity, BV291_3 proteins and each similar protein or peptide may share at least some activity. The TopPredII computer program predicts a potential transmembrane domain within the BV291_3 protein sequence centered around amino acid 48 of SEQ ID NO:143.

BV291_3 protein was expressed in a COS cell expression system, and an expressed protein
10 band of approximately 30 kDa was detected in conditioned medium using SDS polyacrylamide gel electrophoresis.

Clone "CK201_1"

A polynucleotide of the present invention has been identified as clone "CK201_1".
15 CK201_1 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CK201_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CK201_1 protein").

20 The nucleotide sequence of CK201_1 as presently determined is reported in SEQ ID NO:144, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CK201_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:145.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
25 CK201_1 should be approximately 1080 bp.

The nucleotide sequence disclosed herein for CK201_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CK201_1 demonstrated at least some similarity with sequences identified as AA129133 (zo09h12.s1 Stratagene neuroepithelium NT2RAMI 937234 Homo sapiens cDNA
30 clone 567239 3' similar to contains Alu repetitive element), D81444 (Human fetal brain cDNA 5'-end GEN-164G10), R36326 (yg69h09.r1 Homo sapiens cDNA clone 38821 5'), T08553 (Oncogene R-ras mutant cDNA (exons 2-6)), T31595 (Probe (BLUR13) for Alu repeat sequence), X03273 (Human Alu-family cluster 5' of alpha(1)-acid glycoprotein gene), and X69907 (H.sapiens gene for mitochondrial ATP synthase c subunit). The predicted amino acid sequence
35 disclosed herein for CK201_1 was searched against the GenPept and GeneSeq amino acid

sequence databases using the BLASTX search protocol. The predicted CK201_1 protein demonstrated at least some similarity to sequences identified as D21827 (major surface glycoprotein [Pneumocystis carinii]). Based upon sequence similarity, CK201_1 proteins and each similar protein or peptide may share at least some activity. The nucleotide sequence of
5 CK201_1 indicates that it may contain an Alu repetitive element.

CK201_1 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 40 kDa was detected in conditioned medium and membrane fractions using SDS polyacrylamide gel electrophoresis.

10 Clone "CQ331_2"

A polynucleotide of the present invention has been identified as clone "CQ331_2". CQ331_2 was isolated from a human adult heart cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence
15 of the encoded protein. CQ331_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CQ331_2 protein").

The nucleotide sequence of CQ331_2 as presently determined is reported in SEQ ID NO:146, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CQ331_2 protein corresponding to the
20 foregoing nucleotide sequence is reported in SEQ ID NO:147. Amino acids 7 to 19 of SEQ ID NO:147 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 20. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CQ331_2 protein.

25 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CQ331_2 should be approximately 1600 bp.

The nucleotide sequence disclosed herein for CQ331_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CQ331_2 demonstrated at least some similarity with sequences identified as J03766
30 (Canine cardiac calsequestrin mRNA, complete cds), L29766 (Homo sapiens epoxide hydrolase (EPHX) gene, complete cds), N83601 (KK1173F Homo sapiens cDNA clone KK1173 5' similar to CALSEQUESTRIN (CARDIAC)), T99646 (ye73f12.s1 Homo sapiens cDNA clone 123407 3' similar to contains Alu repetitive element;contains PTR5 repetitive element), and W76326 (zd60d04.r1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 345031 5' similar to
35 contains Alu repetitive element). The predicted amino acid sequence disclosed herein for

CQ331_2 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CQ331_2 protein demonstrated at least some similarity to sequences identified as J03766 (DOGCAL_1 Canine cardiac calsequestrin mRNA, complete cds [Canis canis]) and X55040 (calsequestrin [Oryctolagus cuniculus]). Based upon
5 sequence similarity, CQ331_2 proteins and each similar protein or peptide may share at least some activity.

Clone "CT550_1"

A polynucleotide of the present invention has been identified as clone "CT550_1".
10 CT550_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CT550_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CT550_1 protein").

15 The nucleotide sequence of CT550_1 as presently determined is reported in SEQ ID NO:148, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CT550_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:149.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
20 CT550_1 should be approximately 1070 bp.

The nucleotide sequence disclosed herein for CT550_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database. The TopPredII computer program predicts a potential transmembrane domain within the CT550_1 protein sequence centered around amino
25 acid 25 of SEQ ID NO:149.

CT550_1 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 7 kDa was detected in membrane fractions using SDS polyacrylamide gel electrophoresis.

30 Clone "CT585_1"

A polynucleotide of the present invention has been identified as clone "CT585_1". CT585_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence

of the encoded protein. CT585_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CT585_1 protein").

The nucleotide sequence of CT585_1 as presently determined is reported in SEQ ID NO:150, and includes a poly(A) tail. What applicants presently believe to be the proper reading
5 frame and the predicted amino acid sequence of the CT585_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:151. Amino acids 2 to 14 of SEQ ID NO:151 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 15. Due to the hydrophobic nature of the predicted leader/signal
10 sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CT585_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CT585_1 should be approximately 2710 bp.

The nucleotide sequence disclosed herein for CT585_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
15 protocols. CT585_1 demonstrated at least some similarity with sequences identified as AA069442 (zf74b02.s1 Soares pineal gland N3HPG Homo sapiens cDNA clone 382635 3'), L38961 (Homo sapiens putative transmembrane protein (B5) mRNA, complete cds), N34932 (yy49b10.s1 Homo sapiens cDNA clone 276859 3'), N60101 (TgESTzy11f10.r1 Toxoplasma gondii cDNA clone tgzy11f10.r1 5'), and U13019 (Caenorhabditis elegans cosmid T12A2). The predicted amino acid
20 sequence disclosed herein for CT585_1 was searched against the GenPept, GeneSeq, and SwissProt amino acid sequence databases using the BLASTX search protocol. The predicted CT585_1 protein demonstrated at least some similarity to sequences identified as L34260 (transmembrane protein [Mus musculus]), L38961 (transmembrane protein [Homo sapiens]), P46975 (Caenorhabditis elegans oligosaccharyl transferase stt3 [Caenorhabditis elegans]), and
25 U13019 (Caenorhabditis elegans cosmid T12A2 [Caenorhabditis elegans]). Based upon sequence similarity, CT585_1 proteins and each similar protein or peptide may share at least some activity.

Clone "CT797_3"

A polynucleotide of the present invention has been identified as clone "CT797_3".
30 CT797_3 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CT797_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CT797_3 protein").

The nucleotide sequence of CT797_3 as presently determined is reported in SEQ ID NO:152, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CT797_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:153.

- 5 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CT797_3 should be approximately 3300 bp.

The nucleotide sequence disclosed herein for CT797_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CT797_3 demonstrated at least some similarity with sequences identified as AA573847
10 (nk08d06.s1 NCI_CGAP_Co2 Homo sapiens cDNA clone IMAGE:1012907). The predicted amino acid sequence disclosed herein for CT797_3 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CT797_3 protein demonstrated at least some similarity to sequences identified as U18309 (chromokinesin [Gallus gallus]) and Z82271 (T01G1.1 [Caenorhabditis elegans]). Based upon
15 sequence similarity, CT797_3 proteins and each similar protein or peptide may share at least some activity.

CT797_3 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 80 kDa was detected in conditioned medium using SDS polyacrylamide gel electrophoresis.

20

Clone "CB107_1"

A polynucleotide of the present invention has been identified as clone "CB107_1". CB107_1 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
25 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CB107_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CB107_1 protein").

The nucleotide sequence of the 5' portion of CB107_1 as presently determined is reported in SEQ ID NO:154. An additional internal nucleotide sequence from CB107_1 as presently
30 determined is reported in SEQ ID NO:155. What applicants believe is the proper reading frame and the predicted amino acid sequence encoded by such internal sequence is reported in SEQ ID NO:156. Additional nucleotide sequence from the 3' portion of CB107_1, including a poly(A) tail, is reported in SEQ ID NO:157.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
35 CB107_1 should be approximately 3300 bp.

The nucleotide sequence disclosed herein for CB107_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CB107_1 demonstrated at least some similarity with sequences identified as AA121485 (zn80a02.s1 Stratagene lung carcinoma 937218 Homo sapiens cDNA clone 564458 3'),
5 AA428192 (zw51b08.s1 Soares total fetus Nb2HF8 9w Homo sapiens cDNA clone 773559 3'), D83018 (Human mRNA for nel-related protein 2, complete cds), F10919 (H. sapiens partial cDNA sequence; clone c-3lg01), H15375 (ym28d09.r1 Homo sapiens cDNA clone 49527 5' similar to SP A54105 A54105 FIBRILLIN-2 PRECURSOR), U48245 (Rattus norvegicus protein kinase C-binding protein Nel mRNA, complete cds), U59230 (Mus musculus mel (MEL91)
10 mRNA, complete cds), and W28387 (46c5 Human retina cDNA randomly primed sublibrary Homo sapiens cDNA). The predicted amino acid sequence disclosed herein for CB107_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CB107_1 protein demonstrated at least some similarity to sequences identified as D83018 (nel-related protein 2 [Homo sapiens]), R05222 (Antigen
15 GX5401FL encoded by Eimeria tenella genomic DNA), R79964 (Connective tissue growth factor), U48245 (RNU48245_1 protein kinase C-binding protein Nel [Rattus norvegicus]), and U59230 (mel [Mus musculus]). Based upon sequence similarity, CB107_1 proteins and each similar protein or peptide may share at least some activity.

20

Clone "CG300_3"

A polynucleotide of the present invention has been identified as clone "CG300_3". CG300_3 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
25 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CG300_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CG300_3 protein").

The nucleotide sequence of CG300_3 as presently determined is reported in SEQ ID NO:158, and includes a poly(A) tail. What applicants presently believe to be the proper reading
30 frame and the predicted amino acid sequence of the CG300_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:159. Amino acids 30 to 42 of SEQ ID NO:159 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 43. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal
35 sequence not be separated from the remainder of the CG300_3 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CG300_3 should be approximately 1800 bp.

The nucleotide sequence disclosed herein for CG300_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CG300_3 demonstrated at least some similarity with sequences identified as N40185 (yy44d08.s1 Homo sapiens cDNA clone 276399 3') and W01791 (za72d06.r1 Soares fetal lung NbHL19W Homo sapiens cDNA clone 298091 5'). Based upon sequence similarity, CG300_3 proteins and each similar protein or peptide may share at least some activity. The TopPredII computer program predicts four potential transmembrane domains within the CG300_3 protein sequence, centered around amino acids 34, 98, 151, and 179 of SEQ ID NO:159, respectively.

CG300_3 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 29 kDa was detected in membrane fractions using SDS polyacrylamide gel electrophoresis.

Clone "CJ145_1"

A polynucleotide of the present invention has been identified as clone "CJ145_1". CJ145_1 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CJ145_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CJ145_1 protein").

The nucleotide sequence of CJ145_1 as presently determined is reported in SEQ ID NO:160, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CJ145_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:161. Amino acids 6 to 18 of SEQ ID NO:161 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 19. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CJ145_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CJ145_1 should be approximately 3600 bp.

The nucleotide sequence disclosed herein for CJ145_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search

protocols. CJ145_1 demonstrated at least some similarity with sequences identified as R43655 (yc86b04.s1 Homo sapiens cDNA clone 22829 3'), R50995 (yg63f06.s1 Homo sapiens cDNA clone 37377 3' similar to contains MER22 repetitive element), and W92748 (zd92h03.s1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 356981 3'). Based upon sequence similarity,

5 CJ145_1 proteins and each similar protein or peptide may share at least some activity. The nucleotide sequence of CJ145_1 indicates that it may contain a CA simple repeat element.

Clone "CJ160_11"

A polynucleotide of the present invention has been identified as clone "CJ160_11".

10 CJ160_11 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CJ160_11 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CJ160_11 protein").

15 The nucleotide sequence of CJ160_11 as presently determined is reported in SEQ ID NO:162, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CJ160_11 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:163. Amino acids 17 to 29 of SEQ ID NO:163 are a predicted leader/signal sequence, with the predicted mature amino acid sequence

20 beginning at amino acid 30. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CJ160_11 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CJ160_11 should be approximately 1700 bp.

25 The nucleotide sequence disclosed herein for CJ160_11 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CJ160_11 demonstrated at least some similarity with sequences identified as AA024511 (ze76e04.s1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 364926 3') and AC000074 (00884; HTGS phase 3, complete sequence). Based upon sequence similarity,

30 CJ160_11 proteins and each similar protein or peptide may share at least some activity.

CJ160_11 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 96 kDa was detected in conditioned medium using SDS polyacrylamide gel electrophoresis.

Clone "CO20_1"

A polynucleotide of the present invention has been identified as clone "CO20_1". CO20_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CO20_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CO20_1 protein").

The nucleotide sequence of the 5' portion of CO20_1 as presently determined is reported in SEQ ID NO:164. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:165. The predicted amino acid sequence of the CO20_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:165. Amino acids 17 to 29 of SEQ ID NO:165 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 30. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CO20_1 protein. Additional nucleotide sequence from the 3' portion of CO20_1, including a poly(A) tail, is reported in SEQ ID NO:166.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CO20_1 should be approximately 2400 bp.

The nucleotide sequence disclosed herein for CO20_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CO20_1 demonstrated at least some similarity with sequences identified as AA045770 (zl68b10.s1 Stratagene colon (#937204) Homo sapiens cDNA clone 509755 3' similar to SW:R13A_HUMAN P40429 60S RIBOSOMAL PROTEIN L13A), AA070899 (zm66c01.s1 Stratagene neuroepithelium (#937231) Homo sapiens cDNA clone 530592 3' similar to contains Alu repetitive element), AA325205 (EST28155 Cerebellum II Homo sapiens cDNA 5' end), N22253 (yw36a08.s1 Homo sapiens cDNA clone 254294 3' similar to SP S29539 S29539 BASIC PROTEIN, 23K), R01933 (ye85g07.s1 Homo sapiens cDNA clone 124572 3' similar to SP:S29539 S29539 BASIC PROTEIN, 23K), R12008 (yf51f04.r1 Homo sapiens cDNA clone 25456 5'), R39848 (yf51f04.s1 Homo sapiens cDNA clone 25456 3' similar to contains Alu repetitive element;contains PTR5 repetitive element), R56565 (yg91c12.r1 Homo sapiens cDNA clone 40891 5'), T19487 (Human gene signature HUMGS00543), T30988 (EST25695 Homo sapiens cDNA 5' end similar to None), U37026 (Rattus norvegicus brain sodium channel beta 2 subunit (SCNB2) mRNA, complete cds), and X56932 (H.sapiens mRNA for 23 kD highly basic protein). The predicted amino acid sequence disclosed herein for CO20_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol.

The predicted CO20_1 protein demonstrated at least some similarity to sequences identified as U37026 (sodium channel beta 2 subunit [Rattus norvegicus]), U58658 (unknown [Homo sapiens]), and X56932 (23 kD highly basic protein [Homo sapiens]). The sodium channel beta 2 subunit is a glycoprotein with an extracellular domain containing an immunoglobulin-like fold with
5 similarity to the neural cell adhesion molecule contactin. Based upon sequence similarity, CO20_1 proteins and each similar protein or peptide may share at least some activity. The nucleotide sequence of CO20_1 indicates that it may contain an Alu repetitive element.

Clone "CO223_3"

10 A polynucleotide of the present invention has been identified as clone "CO223_3". CO223_3 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CO223_3 is a full-length clone, including the entire coding sequence of
15 a secreted protein (also referred to herein as "CO223_3 protein").

The nucleotide sequence of CO223_3 as presently determined is reported in SEQ ID NO:167, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CO223_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:168. Amino acids 35 to 47 of SEQ ID
20 NO:168 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 48. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CO223_3 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
25 CO223_3 should be approximately 700 bp.

The nucleotide sequence disclosed herein for CO223_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CO223_3 demonstrated at least some similarity with sequences identified as AA004498 (zh87b06.r1 Soares fetal liver spleen 1NFLS S1 Homo sapiens cDNA clone 428243
30 5' similar to gb M62505 C5A ANAPHYLATOXIN CHEMOTACTIC RECEPTOR (HUMAN); contains L1.t1 L1 repetitive element) and U47924 (Human chromosome 12p13 gene cluster, surface antigen CD4 (CD4), A, B, G-protein beta-3 subunit (GNB3), isopeptidase T (ISOT) and triosephosphate isomerase (TPI) genes, complete cds). Based upon sequence similarity, CO223_3 proteins and each similar protein or peptide may share at least some activity.

The 3' end of the CO223_3 polynucleotide sequence contains a 54-bp sequence that is repeated three times in the clone; these repeats begin at positions 314, 368, and 422 of SEQ ID NO:167 and encode amino acids 47 to 64, 65 to 82, and 83 to 99 of SEQ ID NO:168, respectively.

5 Clone "CO310_2"

A polynucleotide of the present invention has been identified as clone "CO310_2". CO310_2 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence
10 of the encoded protein. CO310_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CO310_2 protein").

The nucleotide sequence of CO310_2 as presently determined is reported in SEQ ID NO:169, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CO310_2 protein corresponding to the
15 foregoing nucleotide sequence is reported in SEQ ID NO:170.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CO310_2 should be approximately 1400 bp.

The nucleotide sequence disclosed herein for CO310_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
20 protocols. No hits were found in the database. The nucleotide sequence of CO310_2 indicates that it may contain an L1 repetitive element.

Clone "CP258_3"

A polynucleotide of the present invention has been identified as clone "CP258_3".
25 CP258_3 was isolated from a human adult salivary gland cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CP258_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CP258_3 protein").

30 The nucleotide sequence of CP258_3 as presently determined is reported in SEQ ID NO:171, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CP258_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:172. Amino acids 3 to 15 of SEQ ID NO:172 are a predicted leader/signal sequence, with the predicted mature amino acid sequence
35 beginning at amino acid 16. Due to the hydrophobic nature of the predicted leader/signal

sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CP258_3 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CP258_3 should be approximately 560 bp.

5 The nucleotide sequence disclosed herein for CP258_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database.

CP258_3 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 26 kDa was detected in conditioned medium and membrane fractions using
10 SDS polyacrylamide gel electrophoresis.

Clone "CW1155_3"

A polynucleotide of the present invention has been identified as clone "CW1155_3". CW1155_3 was isolated from a human fetal brain cDNA library using methods which are
15 selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CW1155_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CW1155_3 protein").

The nucleotide sequence of CW1155_3 as presently determined is reported in SEQ ID
20 NO:173, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CW1155_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:174. Amino acids 220 to 232 of SEQ ID NO:174 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 233. Due to the hydrophobic nature of the predicted leader/signal
25 sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CW1155_3 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CW1155_3 should be approximately 1170 bp.

The nucleotide sequence disclosed herein for CW1155_3 was searched against the
30 GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CW1155_3 demonstrated at least some similarity with sequences identified as AA169043 (ms36h08.r1 Stratagene mouse heart (#937316) Mus musculus cDNA clone 613695 5'), D86145 (Rat mRNA), and H29261 (ym32b03.s1 Homo sapiens cDNA clone 49733 3'). Based upon sequence similarity, CW1155_3 proteins and each similar protein or peptide may share at
35 least some activity.

Clone "CZ247_2"

A polynucleotide of the present invention has been identified as clone "CZ247_2". CZ247_2 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
5 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CZ247_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CZ247_2 protein").

The nucleotide sequence of CZ247_2 as presently determined is reported in SEQ ID NO:175, and includes a poly(A) tail. What applicants presently believe to be the proper reading
10 frame and the predicted amino acid sequence of the CZ247_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:176. Amino acids 545 to 557 of SEQ ID NO:176 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 558. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal
15 sequence not be separated from the remainder of the CZ247_2 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CZ247_2 should be approximately 2300 bp.

The nucleotide sequence disclosed herein for CZ247_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
20 protocols. CZ247_2 demonstrated at least some similarity with sequences identified as T09256 (Human ara Kb beta-galactosidase fusion protein coding sequence), W27222 (26h9 Human retina cDNA randomly primed sublibrary Homo sapiens cDNA), and W72736 (zd71e02.s1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 346106 3'). The predicted amino acid sequence disclosed herein for CZ247_2 was searched against the GenPept and GeneSeq amino acid
25 sequence databases using the BLASTX search protocol. The predicted CZ247_2 protein demonstrated at least some similarity to sequences identified as R88069 (Human ara Kb beta-galactosidase fusion protein). Based upon sequence similarity, CZ247_2 proteins and each similar protein or peptide may share at least some activity.

Clone "AM666_1"

A polynucleotide of the present invention has been identified as clone "AM666_1". AM666_1 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino

acid sequence of the encoded protein. AM666_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AM666_1 protein").

The nucleotide sequence of AM666_1 as presently determined is reported in SEQ ID NO:177, and includes a poly(A) tail. What applicants presently believe to be the proper reading
5 frame and the predicted amino acid sequence of the AM666_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:178. Amino acids 15 to 27 of SEQ ID NO:178 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 28. Due to the hydrophobic nature of the predicted leader/signal
10 sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the AM666_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AM666_1 should be approximately 1300 bp.

The nucleotide sequence disclosed herein for AM666_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA
15 search protocols. AM666_1 demonstrated at least some similarity with sequences identified as AA493985 (nh07g08.s1 NCI_CGAP_Thy1 Homo sapiens cDNA clone). Based upon sequence similarity, AM666_1 proteins and each similar protein or peptide may share at least some activity.

AM666_1 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 17 kDa was detected in membrane fractions using SDS polyacrylamide gel
20 electrophoresis.

Clone "BN387_3"

A polynucleotide of the present invention has been identified as clone "BN387_3". BN387_3 was isolated from a human adult placenta cDNA library using methods which are
25 selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BN387_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BN387_3 protein").

The nucleotide sequence of BN387_3 as presently determined is reported in SEQ ID
30 NO:179, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BN387_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:180. Amino acids 14 to 26 of SEQ ID NO:180 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 27. Due to the hydrophobic nature of the predicted leader/signal

sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the BN387_3 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BN387_3 should be approximately 2000 bp.

5 The nucleotide sequence disclosed herein for BN387_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BN387_3 demonstrated at least some similarity with sequences identified as H16912 (ym39d01.r1 Homo sapiens cDNA clone 50771 5'). Based upon sequence similarity, BN387_3 proteins and each similar protein or peptide may share at least some activity.

10 BN387_3 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 30 kDa was detected in conditioned medium using SDS polyacrylamide gel electrophoresis.

Clone "BQ135_2"

15 A polynucleotide of the present invention has been identified as clone "BQ135_2". BQ135_2 was isolated from a human adult colon (adenocarcinoma Caco2) cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BQ135_2 is a full-length clone,
20 including the entire coding sequence of a secreted protein (also referred to herein as "BQ135_2 protein").

 The nucleotide sequence of BQ135_2 as presently determined is reported in SEQ ID NO:181, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BQ135_2 protein corresponding to the
25 foregoing nucleotide sequence is reported in SEQ ID NO:182.

 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BQ135_2 should be approximately 1200 bp.

 The nucleotide sequence disclosed herein for BQ135_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
30 protocols. BQ135_2 demonstrated at least some similarity with sequences identified as AA023751 (mh81f01.r1 Soares mouse placenta 4NbMP13.5 14.5 Mus musculus cDNA clone 457369 5'), AA105433 (ml83g01.r1 Stratagene mouse kidney (#937315) Mus musculus cDNA clone 518640 5'), D64061 (Rat brain mRNA for annexin V-binding protein (ABP-7), partial cds), and N67257 (yz49b08.s1 Homo sapiens cDNA clone 286359 3'). The predicted amino acid
35 sequence disclosed herein for BQ135_2 was searched against the GenPept and GeneSeq amino

acid sequence databases using the BLASTX search protocol. The predicted BQ135_2 protein demonstrated at least some similarity to sequences identified as D64061 (annexin V-binding protein (ABP-7) [Rattus norvegicus]). Annexins associate with membranes and act as ion channels, they can also act as an autocrine factor that enhances osteoclast formation and bone resorption. Annexins have been localized in nucleoli and mitochondria but also in the cytoplasm, plasma (i.e. blood) and in association with vesicles. They are probably involved in fusing vesicles to each other and to plasma membranes causing secretion of vesicular contents. Specifically they have a calcium-dependent ability to bind phospholipids. Thus they are membrane associated. It is possible that annexin-binding proteins are also membrane associated even though they are highly hydrophilic through the same mechanism (electrostatic interaction with phospholipids of membranes). Based upon sequence similarity, BQ135_2 proteins and each similar protein or peptide may share at least some activity.

Clone "CR678_1"

A polynucleotide of the present invention has been identified as clone "CR678_1". CR678_1 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CR678_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CR678_1 protein").

The nucleotide sequence of CR678_1 as presently determined is reported in SEQ ID NO:183, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CR678_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:184.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CR678_1 should be approximately 870 bp.

The nucleotide sequence disclosed herein for CR678_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CR678_1 demonstrated at least some similarity with sequences identified as X85232 (H.sapiens chromosome 3 sequences). Based upon sequence similarity, CR678_1 proteins and each similar protein or peptide may share at least some activity. The nucleotide sequence of CR678_1 indicates that it may contain an Alu repetitive element.

Clone "CW420_2"

A polynucleotide of the present invention has been identified as clone "CW420_2". CW420_2 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CW420_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CW420_2 protein").

The nucleotide sequence of CW420_2 as presently determined is reported in SEQ ID NO:185, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CW420_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:186.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CW420_2 should be approximately 5100 bp.

The nucleotide sequence disclosed herein for CW420_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CW420_2 demonstrated at least some similarity with sequences identified as T55440 (yb38e09.s1 Homo sapiens cDNA clone 73480 3'). Based upon sequence similarity, CW420_2 proteins and each similar protein or peptide may share at least some activity. The TopPredII computer program predicts two potential transmembrane domains within the CW420_2 protein sequence centered around amino acids 500 and 1270 of SEQ ID NO:186, respectively.

Clone "CW795_2"

A polynucleotide of the present invention has been identified as clone "CW795_2". CW795_2 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CW795_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CW795_2 protein").

The nucleotide sequence of CW795_2 as presently determined is reported in SEQ ID NO:187, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CW795_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:188.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CW795_2 should be approximately 3000 bp.

The nucleotide sequence disclosed herein for CW795_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA

search protocols. CW795_2 demonstrated at least some similarity with sequences identified as AA115676 (zl86a09.s1 Stratagene colon (#937204) Homo sapiens cDNA clone 511480 3'), N22955 (yw44h07.s1 Homo sapiens cDNA clone 255133 3'), and W56804 (zd16g06.s1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 340858 3'). The predicted amino acid sequence disclosed herein for CW795_2 was searched against the GenPept, GeneSeq, and SwissProt amino acid sequence databases using the BLASTX search protocol. The predicted CW795_2 protein demonstrated at least some similarity to sequences identified as X81068 (probable mitochondrial protein) and the yeast proteins rca1 and afg3 (tat-binding homologues). Based upon sequence similarity, CW795_2 proteins and each similar protein or peptide may share at least some activity.

10 The TopPredII computer program predicts two potential transmembrane domains within the CW795_2 protein sequence centered around amino acids 60 and 170 of SEQ ID NO:188, respectively.

CW795_2 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 10 kDa was detected in membrane fractions using SDS polyacrylamide gel electrophoresis.

Clone "CW823_3"

A polynucleotide of the present invention has been identified as clone "CW823_3". CW823_3 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CW823_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CW823_3 protein").

The nucleotide sequence of CW823_3 as presently determined is reported in SEQ ID NO:189, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CW823_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:190.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CW823_3 should be approximately 600 bp.

30 The nucleotide sequence disclosed herein for CW823_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database.

Clone "DF989_3"

A polynucleotide of the present invention has been identified as clone "DF989_3". DF989_3 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
5 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. DF989_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "DF989_3 protein").

The nucleotide sequence of the 5' portion of DF989_3 as presently determined is reported in SEQ ID NO:191. What applicants presently believe is the proper reading frame for the coding
10 region is indicated in SEQ ID NO:192. The predicted amino acid sequence of the DF989_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:192. Amino acids 2 to 14 of SEQ ID NO:192 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 15. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the
15 predicted leader/signal sequence not be separated from the remainder of the DF989_3 protein. Additional nucleotide sequence from the 3' portion of DF989_3, including a poly(A) tail, is reported in SEQ ID NO:193.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone DF989_3 should be approximately 1800 bp.

20 The nucleotide sequence disclosed herein for DF989_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. DF989_3 demonstrated at least some similarity with sequences identified as R24724 (yg43c05.r1 Homo sapiens cDNA clone 35337 5') and T33717 (EST58870 Homo sapiens cDNA 5' end similar to None). Based upon sequence similarity, DF989_3 proteins and each similar
25 protein or peptide may share at least some activity.

Clone "DL162_1"

A polynucleotide of the present invention has been identified as clone "DL162_1". DL162_1 was isolated from a human adult brain cDNA library using methods which are selective
30 for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. DL162_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "DL162_1 protein").

The nucleotide sequence of DL162_1 as presently determined is reported in SEQ ID
35 NO:194, and includes a poly(A) tail. What applicants presently believe to be the proper reading

frame and the predicted amino acid sequence of the DL162_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:195. Amino acids 28 to 40 of SEQ ID NO:195 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 41. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the DL162_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone DL162_1 should be approximately 875 bp.

The nucleotide sequence disclosed herein for DL162_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database.

Clone "DL162_2"

A polynucleotide of the present invention has been identified as clone "DL162_2". DL162_2 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. DL162_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "DL162_2 protein").

The nucleotide sequence of DL162_2 as presently determined is reported in SEQ ID NO:196, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the DL162_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:197. Amino acids 1 to 13 of SEQ ID NO:197 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 14. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the DL162_2 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone DL162_2 should be approximately 4000 bp.

The predicted amino acid sequence disclosed herein for DL162_2 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted DL162_2 protein demonstrated at least some similarity to sequences identified as AB002309 (KIAA0311 protein [Homo sapiens]). The TopPredII computer program predicts a potential transmembrane domains within the DL162_2 protein sequence near the carboxyl terminus of SEQ ID NO:197.

DL162_2 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 160 kDa was detected in membrane fractions using SDS polyacrylamide gel electrophoresis.

5 Clone "EC172_1"

A polynucleotide of the present invention has been identified as clone "EC172_1". EC172_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence
10 of the encoded protein. EC172_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "EC172_1 protein").

The nucleotide sequence of EC172_1 as presently determined is reported in SEQ ID NO:198, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the EC172_1 protein corresponding to the
15 foregoing nucleotide sequence is reported in SEQ ID NO:199. Amino acids 659 to 671 of SEQ ID NO:199 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 672. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the EC172_1 protein.

20 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone EC172_1 should be approximately 4000 bp.

The nucleotide sequence disclosed herein for EC172_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. EC172_1 demonstrated at least some similarity with sequences identified as H31192
25 (EST104991 Rattus sp. cDNA 3' end similar to C.elegans hypothetical protein ZK1098.10) and U29585 (Streptococcus pyogenes emm18.1). The predicted amino acid sequence disclosed herein for EC172_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted EC172_1 protein demonstrated at least some similarity to sequences identified as Z22176 (ZK1098.10 [Caenorhabditis elegans]). Based upon
30 sequence similarity, EC172_1 proteins and each similar protein or peptide may share at least some activity.

Deposit of Clones

Clones AX65_22, BD335_14, BG241_1, BL187_4, BL249_18, BO71_1, BO365_2,
35 BV51_1, BV140_3, BV141_2, CC194_4, and DA136_11 were deposited on October 3, 1996 with

the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98196, from which each clone comprising a particular polynucleotide is obtainable.

5 Clones AR415_4, AS63_29, BG160_1, BO432_4, BO538_2, BR595_4, CI490_2, CI522_1, CN238_1, CO390_1, and AY304_1 (an additional isolate of clone AY304_14) were deposited on October 25, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98232, from which each clone comprising
10 a particular polynucleotide is obtainable. Clone AY304_14 was deposited on October 23, 1997 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and was given the accession number 98561.

Clones AJ20_2, AR440_1, AS164_1, AX8_1, BD176_3, BD339_1, BD427_1, BL229_22,
15 BV123_16, and CH377_1 were deposited on November 15, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98261, from which each clone comprising a particular polynucleotide is obtainable.

Clones BD441_1, BD441_2, BG102_3, BK158_1, BP163_1, BZ16_3, CC182_1,
20 CG109_1 and CJ397_1 were deposited on November 20, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98264, from which each clone comprising a particular polynucleotide is obtainable.

Clones AM795_4, AT340_1, BG132_1, BG219_2, BG366_2, BV172_2, CC247_10,
25 CI480_9, CO722_1, and CT748_2 were deposited on December 5, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98271, from which each clone comprising a particular polynucleotide is obtainable.

Clones AJ1_1, AQ73_3, BG142_1, BV66_1, BV291_3, CK201_1, CQ331_2, CT550_1,
30 CT585_1 and CT797_3 were deposited on December 13, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98278, from which each clone comprising a particular polynucleotide is obtainable.

Clones CB107_1, CG300_3, CJ145_1, CJ160_11, CO20_1, CO223_1, CO310_2,
35 CP258_3, CW1155_3 and CZ247_2 were deposited on December 17, 1996 with the ATCC

(American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98279, from which each clone comprising a particular polynucleotide is obtainable. Clone CO223_3 was deposited on January 9, 1997 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and was given the accession number 98291.

Clones AM666_1, BN387_3, BQ135_2, CR678_1, CW420_2, CW795_2, CW823_3, DF989_3, DL162_2, DL162_1, and EC172_1 were deposited on January 10, 1997 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98292, from which each clone comprising a particular polynucleotide is obtainable.

All restrictions on the availability to the public of the deposited material will be irrevocably removed upon the granting of the patent, except for the requirements specified in 37 C.F.R. § 1.808(b), and the term of the deposit will comply with 37 C.F.R. § 1.806.

Each clone has been transfected into separate bacterial cells (*E. coli*) in this composite deposit. Each clone can be removed from the vector in which it was deposited by performing an EcoRI/NotI digestion (5' site, EcoRI; 3' site, NotI) to produce the appropriate fragment for such clone. Each clone was deposited in either the pED6 or pNOTs vector depicted in Figures 1A and 1B, respectively. The pED6dpc2 vector ("pED6") was derived from pED6dpc1 by insertion of a new polylinker to facilitate cDNA cloning (Kaufman *et al.*, 1991, *Nucleic Acids Res.* 19: 4485-4490); the pNOTs vector was derived from pMT2 (Kaufman *et al.*, 1989, *Mol. Cell. Biol.* 9: 946-958) by deletion of the DHFR sequences, insertion of a new polylinker, and insertion of the M13 origin of replication in the ClaI site. In some instances, the deposited clone can become "flipped" (i.e., in the reverse orientation) in the deposited isolate. In such instances, the cDNA insert can still be isolated by digestion with EcoRI and NotI. However, NotI will then produce the 5' site and EcoRI will produce the 3' site for placement of the cDNA in proper orientation for expression in a suitable vector. The cDNA may also be expressed from the vectors in which they were deposited.

Bacterial cells containing a particular clone can be obtained from the composite deposit as follows:

An oligonucleotide probe or probes should be designed to the sequence that is known for that particular clone. This sequence can be derived from the sequences provided herein, or from a combination of those sequences. The sequence of an oligonucleotide probe that was used to isolate or to sequence each full-length clone is identified below, and should be most reliable in isolating the clone of interest.

	<u>Clone</u>	<u>Probe Sequence</u>
	AX65_22	SEQ ID NO:200
	BD335_14	SEQ ID NO:201
	BG241_1	SEQ ID NO:202
5	BL187_4	SEQ ID NO:203
	BL249_18	SEQ ID NO:204
	BO71_1	SEQ ID NO:205
	BO365_2	SEQ ID NO:206
	BV51_1	SEQ ID NO:207
10	BV140_3	SEQ ID NO:208
	BV141_2	SEQ ID NO:209
	CC194_4	SEQ ID NO:210
	DA136_11	SEQ ID NO:211
	AR415_4	SEQ ID NO:212
15	AS63_29	SEQ ID NO:213
	AY304_14	SEQ ID NO:214
	BG160_1	SEQ ID NO:215
	BO432_4	SEQ ID NO:216
	BO538_2	SEQ ID NO:217
20	BR595_4	SEQ ID NO:218
	CI490_2	SEQ ID NO:219
	CI522_1	SEQ ID NO:220
	CN238_1	SEQ ID NO:221
	CO390_1	SEQ ID NO:222
25	AJ20_2	SEQ ID NO:223
	AR440_1	SEQ ID NO:224
	AS164_1	SEQ ID NO:225
	AX8_1	SEQ ID NO:226
	BD176_3	SEQ ID NO:227
30	BD339_1	SEQ ID NO:228
	BD427_1	SEQ ID NO:229
	BL229_22	SEQ ID NO:230
	BV123_16	SEQ ID NO:231
	CH377_1	SEQ ID NO:232
35	BD441_1	SEQ ID NO:233

	BD441_2	SEQ ID NO:234
	BG102_3	SEQ ID NO:235
	BK158_1	SEQ ID NO:236
	BP163_1	SEQ ID NO:237
5	BZ16_3	SEQ ID NO:238
	CC182_1	SEQ ID NO:239
	CG109_1	SEQ ID NO:240
	CJ397_1	SEQ ID NO:241
	AM795_4	SEQ ID NO:242
10	AT340_1	SEQ ID NO:243
	BG132_1	SEQ ID NO:244
	BG219_2	SEQ ID NO:245
	BG366_2	SEQ ID NO:246
	BV172_2	SEQ ID NO:247
15	CC247_10	SEQ ID NO:248
	CI480_9	SEQ ID NO:249
	CO722_1	SEQ ID NO:250
	CT748_2	SEQ ID NO:251
	AJ1_1	SEQ ID NO:252
20	AQ73_3	SEQ ID NO:253
	BG142_1	SEQ ID NO:254
	BV66_1	SEQ ID NO:255
	BV291_3	SEQ ID NO:256
	CK201_1	SEQ ID NO:257
25	CQ331_2	SEQ ID NO:258
	CT550_1	SEQ ID NO:259
	CT585_1	SEQ ID NO:260, SEQ ID NO:262
	CT797_3	SEQ ID NO:261
	CB107_1	SEQ ID NO:263
30	CG300_3	SEQ ID NO:264
	CJ145_1	SEQ ID NO:265
	CJ160_11	SEQ ID NO:266
	CO20_1	SEQ ID NO:267
	CO223_3	SEQ ID NO:268
35	CO310_2	SEQ ID NO:269

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|----|------------------|---------------|
| | CP258_3 | SEQ ID NO:270 |
| | CW1155_3 | SEQ ID NO:271 |
| | CZ247_2 | SEQ ID NO:272 |
| | AM666_1 | SEQ ID NO:273 |
| 5 | BN387_3 | SEQ ID NO:274 |
| | BQ135_2 | SEQ ID NO:275 |
| | CR678_1 | SEQ ID NO:276 |
| | CW420_2 | SEQ ID NO:277 |
| | CW795_2 | SEQ ID NO:278 |
| 10 | CW823_3 | SEQ ID NO:279 |
| | DF989_3 | SEQ ID NO:280 |
| | DL162_1, DL162_2 | SEQ ID NO:281 |
| | EC172_1 | SEQ ID NO:282 |
- 15 In the sequences listed above which include an N at position 2, that position is occupied in preferred probes/primers by a biotinylated phosphoramidite residue rather than a nucleotide (such as, for example, that produced by use of biotin phosphoramidite (1-dimethoxytrityloxy-2-(N-biotinyl-4-aminobutyl)-propyl-3-O-(2-cyanoethyl)-(N,N-diisopropyl)-phosphoramidite) (Glen Research, cat. no. 10-1953)).
- 20 The design of the oligonucleotide probe should preferably follow these parameters:
- (a) It should be designed to an area of the sequence which has the fewest ambiguous bases ("N's"), if any;
 - (b) It should be designed to have a T_m of approx. 80 ° C (assuming 2° for each A or T and 4 degrees for each G or C).
- 25 The oligonucleotide should preferably be labeled with γ -³²P ATP (specific activity 6000 Ci/mmole) and T4 polynucleotide kinase using commonly employed techniques for labeling oligonucleotides. Other labeling techniques can also be used. Unincorporated label should preferably be removed by gel filtration chromatography or other established methods. The amount of radioactivity incorporated into the probe should be quantitated by measurement in a
- 30 scintillation counter. Preferably, specific activity of the resulting probe should be approximately 4e+6 dpm/pmole.
- The bacterial culture containing the pool of full-length clones should preferably be thawed and 100 μ l of the stock used to inoculate a sterile culture flask containing 25 ml of sterile L-broth containing ampicillin at 100 μ g/ml. The culture should preferably be grown to saturation at 37°C,
- 35 and the saturated culture should preferably be diluted in fresh L-broth. Aliquots of these dilutions

should preferably be plated to determine the dilution and volume which will yield approximately 5000 distinct and well-separated colonies on solid bacteriological media containing L-broth containing ampicillin at 100 µg/ml and agar at 1.5% in a 150 mm petri dish when grown overnight at 37°C. Other known methods of obtaining distinct, well-separated colonies can also be employed.

Standard colony hybridization procedures should then be used to transfer the colonies to nitrocellulose filters and lyse, denature and bake them.

The filter is then preferably incubated at 65°C for 1 hour with gentle agitation in 6X SSC (20X stock is 175.3 g NaCl/liter, 88.2 g Na citrate/liter, adjusted to pH 7.0 with NaOH) containing 0.5% SDS, 100 µg/ml of yeast RNA, and 10 mM EDTA (approximately 10 mL per 150 mm filter). Preferably, the probe is then added to the hybridization mix at a concentration greater than or equal to 1e+6 dpm/mL. The filter is then preferably incubated at 65°C with gentle agitation overnight. The filter is then preferably washed in 500 mL of 2X SSC/0.5% SDS at room temperature without agitation, preferably followed by 500 mL of 2X SSC/0.1% SDS at room temperature with gentle shaking for 15 minutes. A third wash with 0.1X SSC/0.5% SDS at 65°C for 30 minutes to 1 hour is optional. The filter is then preferably dried and subjected to autoradiography for sufficient time to visualize the positives on the X-ray film. Other known hybridization methods can also be employed.

The positive colonies are picked, grown in culture, and plasmid DNA isolated using standard procedures. The clones can then be verified by restriction analysis, hybridization analysis, or DNA sequencing.

Fragments of the proteins of the present invention which are capable of exhibiting biological activity are also encompassed by the present invention. Fragments of the protein may be in linear form or they may be cyclized using known methods, for example, as described in H.U. Saragovi, *et al.*, Bio/Technology 10, 773-778 (1992) and in R.S. McDowell, *et al.*, J. Amer. Chem. Soc. 114, 9245-9253 (1992), both of which are incorporated herein by reference. Such fragments may be fused to carrier molecules such as immunoglobulins for many purposes, including increasing the valency of protein binding sites. For example, fragments of the protein may be fused through "linker" sequences to the Fc portion of an immunoglobulin. For a bivalent form of the protein, such a fusion could be to the Fc portion of an IgG molecule. Other immunoglobulin isotypes may also be used to generate such fusions. For example, a protein - IgM fusion would generate a decavalent form of the protein of the invention.

The present invention also provides both full-length and mature forms of the disclosed proteins. The full-length form of the such proteins is identified in the sequence listing by translation of the nucleotide sequence of each disclosed clone. The mature form(s) of such protein

may be obtained by expression of the disclosed full-length polynucleotide (preferably those deposited with the ATCC) in a suitable mammalian cell or other host cell. The sequence(s) of the mature form(s) of the protein may also be determinable from the amino acid sequence of the full-length form.

5 The present invention also provides genes corresponding to the polynucleotide sequences disclosed herein. "Corresponding genes" are the regions of the genome that are transcribed to produce the mRNAs from which cDNA polynucleotide sequences are derived and may include contiguous regions of the genome necessary for the regulated expression of such genes. Corresponding genes may therefore include but are not limited to coding sequences, 5' and 3'

10 untranslated regions, alternatively spliced exons, introns, promoters, enhancers, and silencer or suppressor elements. The corresponding genes can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include the preparation of probes or primers from the disclosed sequence information for identification and/or amplification of genes in appropriate genomic libraries or other sources of genomic materials. An "isolated gene"

15 is a gene that has been separated from the adjacent coding sequences, if any, present in the genome of the organism from which the gene was isolated.

 The chromosomal location corresponding to the polynucleotide sequences disclosed herein may also be determined, for example by hybridizing appropriately labeled polynucleotides of the present invention to chromosomes *in situ*. It may also be possible to determine the

20 corresponding chromosomal location for a disclosed polynucleotide by identifying significantly similar nucleotide sequences in public databases, such as expressed sequence tags (ESTs), that have already been mapped to particular chromosomal locations. For at least some of the polynucleotide sequences disclosed herein, public database sequences having at least some similarity to the polynucleotide of the present invention have been listed by database accession

25 number. Searches using the GenBank accession numbers of these public database sequences can then be performed at an Internet site provided by the National Center for Biotechnology Information having the address <http://www.ncbi.nlm.nih.gov/UniGene/>, in order to identify "UniGene clusters" of overlapping sequences. Many of the "UniGene clusters" so identified will already have been mapped to particular chromosomal sites.

30 Organisms that have enhanced, reduced, or modified expression of the gene(s) corresponding to the polynucleotide sequences disclosed herein are provided. The desired change in gene expression can be achieved through the use of antisense polynucleotides or ribozymes that bind and/or cleave the mRNA transcribed from the gene (Albert and Morris, 1994, *Trends Pharmacol. Sci.* 15(7): 250-254; Lavarosky *et al.*, 1997, *Biochem. Mol. Med.* 62(1): 11-22; and

35 Hampel, 1998, *Prog. Nucleic Acid Res. Mol. Biol.* 58: 1-39; all of which are incorporated by

reference herein). The desired change in gene expression can also be achieved through the use of double-stranded ribonucleotide molecules having some complementarity to the mRNA transcribed from the gene, and which interfere with the transcription, stability, or expression of the mRNA ("RNA interference" or "RNAi"; Fire *et al.*, 1998, *Nature* 391 (6669): 806-811; 5 Montgomery *et al.*, 1998, *Proc. Natl. Acad. Sci. USA* 95 (26): 15502-15507; and Sharp, 1999, *Genes Dev.* 13 (2): 139-141; all of which are incorporated by reference herein). Transgenic animals that have multiple copies of the gene(s) corresponding to the polynucleotide sequences disclosed herein, preferably produced by transformation of cells with genetic constructs that are stably maintained within the transformed cells and their progeny, are provided. Transgenic 10 animals that have modified genetic control regions that increase or reduce gene expression levels, or that change temporal or spatial patterns of gene expression, are also provided (see European Patent No. 0 649 464 B1, incorporated by reference herein). In addition, organisms are provided in which the gene(s) corresponding to the polynucleotide sequences disclosed herein have been partially or completely inactivated, through insertion of extraneous sequences into the 15 corresponding gene(s) or through deletion of all or part of the corresponding gene(s). Partial or complete gene inactivation can be accomplished through insertion, preferably followed by imprecise excision, of transposable elements (Plasterk, 1992, *Bioessays* 14(9): 629-633; Zwaal *et al.*, 1993, *Proc. Natl. Acad. Sci. USA* 90(16): 7431-7435; Clark *et al.*, 1994, *Proc. Natl. Acad. Sci. USA* 91(2): 719-722; all of which are incorporated by reference herein), or through 20 homologous recombination, preferably detected by positive/negative genetic selection strategies (Mansour *et al.*, 1988, *Nature* 336: 348-352; U.S. Patent Nos. 5,464,764; 5,487,992; 5,627,059; 5,631,153; 5,614, 396; 5,616,491; and 5,679,523; all of which are incorporated by reference herein). These organisms with altered gene expression are preferably eukaryotes and more preferably are mammals. Such organisms are useful for the development of non-human models 25 for the study of disorders involving the corresponding gene(s), and for the development of assay systems for the identification of molecules that interact with the protein product(s) of the corresponding gene(s).

Where the protein of the present invention is membrane-bound (e.g., is a receptor), the present invention also provides for soluble forms of such protein. In such forms, part or all of the 30 intracellular and transmembrane domains of the protein are deleted such that the protein is fully secreted from the cell in which it is expressed. The intracellular and transmembrane domains of proteins of the invention can be identified in accordance with known techniques for determination of such domains from sequence information. For example, the TopPredII computer program can be used to predict the location of transmembrane domains in an amino acid sequence, domains

which are described by the location of the center of the transmembrane domain, with at least ten transmembrane amino acids on each side of the reported central residue(s).

Proteins and protein fragments of the present invention include proteins with amino acid sequence lengths that are at least 25% (more preferably at least 50%, and most preferably at least 75%) of the length of a disclosed protein and have at least 60% sequence identity (more preferably, at least 75% identity; most preferably at least 90% or 95% identity) with that disclosed protein, where sequence identity is determined by comparing the amino acid sequences of the proteins when aligned so as to maximize overlap and identity while minimizing sequence gaps. Also included in the present invention are proteins and protein fragments that contain a segment preferably comprising 8 or more (more preferably 20 or more, most preferably 30 or more) contiguous amino acids that shares at least 75% sequence identity (more preferably, at least 85% identity; most preferably at least 95% identity) with any such segment of any of the disclosed proteins.

In particular, sequence identity may be determined using WU-BLAST (Washington University BLAST) version 2.0 software, which builds upon WU-BLAST version 1.4, which in turn is based on the public domain NCBI-BLAST version 1.4 (Altschul and Gish, 1996, Local alignment statistics, Doolittle *ed.*, *Methods in Enzymology* 266: 460-480; Altschul *et al.*, 1990, Basic local alignment search tool, *Journal of Molecular Biology* 215: 403-410; Gish and States, 1993, Identification of protein coding regions by database similarity search, *Nature Genetics* 3: 266-272; Karlin and Altschul, 1993, Applications and statistics for multiple high-scoring segments in molecular sequences, *Proc. Natl. Acad. Sci. USA* 90: 5873-5877; all of which are incorporated by reference herein). WU-BLAST version 2.0 executable programs for several UNIX platforms can be downloaded from <ftp://blast.wustl.edu/blast/executables>. The complete suite of search programs (BLASTP, BLASTN, BLASTX, TBLASTN, and TBLASTX) is provided at that site, in addition to several support programs. WU-BLAST 2.0 is copyrighted and may not be sold or redistributed in any form or manner without the express written consent of the author; but the posted executables may otherwise be freely used for commercial, nonprofit, or academic purposes. In all search programs in the suite -- BLASTP, BLASTN, BLASTX, TBLASTN and TBLASTX -- the gapped alignment routines are integral to the database search itself, and thus yield much better sensitivity and selectivity while producing the more easily interpreted output. Gapping can optionally be turned off in all of these programs, if desired. The default penalty (Q) for a gap of length one is Q=9 for proteins

and BLASTP, and Q=10 for BLASTN, but may be changed to any integer value including zero, one through eight, nine, ten, eleven, twelve through twenty, twenty-one through fifty, fifty-one through one hundred, etc. The default per-residue penalty for extending a gap (R) is R=2 for proteins and BLASTP, and R=10 for BLASTN, but may be changed to any integer value including zero, one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve through twenty, twenty-one through fifty, fifty-one through one hundred, etc. Any combination of values for Q and R can be used in order to align sequences so as to maximize overlap and identity while minimizing sequence gaps. The default amino acid comparison matrix is BLOSUM62, but other amino acid comparison matrices such as PAM can be utilized.

Species homologues of the disclosed polynucleotides and proteins are also provided by the present invention. As used herein, a "species homologue" is a protein or polynucleotide with a different species of origin from that of a given protein or polynucleotide, but with significant sequence similarity to the given protein or polynucleotide. Preferably, polynucleotide species homologues have at least 60% sequence identity (more preferably, at least 75% identity; most preferably at least 90% identity) with the given polynucleotide, and protein species homologues have at least 30% sequence identity (more preferably, at least 45% identity; most preferably at least 60% identity) with the given protein, where sequence identity is determined by comparing the nucleotide sequences of the polynucleotides or the amino acid sequences of the proteins when aligned so as to maximize overlap and identity while minimizing sequence gaps. Species homologues may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source from the desired species. Preferably, species homologues are those isolated from mammalian species. Most preferably, species homologues are those isolated from certain mammalian species such as, for example, *Pan troglodytes*, *Gorilla gorilla*, *Pongo pygmaeus*, *Hylobates concolor*, *Macaca mulatta*, *Papio papio*, *Papio hamadryas*, *Cercopithecus aethiops*, *Cebus capucinus*, *Aotus trivirgatus*, *Sanguinus oedipus*, *Microcebus murinus*, *Mus musculus*, *Rattus norvegicus*, *Cricetulus griseus*, *Felis catus*, *Mustela vison*, *Canis familiaris*, *Oryctolagus cuniculus*, *Bos taurus*, *Ovis aries*, *Sus scrofa*, and *Equus caballus*, for which genetic maps have been created allowing the identification of syntenic relationships between the genomic organization of genes in one species and the genomic organization of the related genes in another species (O'Brien and Seuánez, 1988, *Ann. Rev. Genet.* 22: 323-351; O'Brien *et al.*, 1993, *Nature Genetics* 3:103-112; Johansson *et al.*, 1995, *Genomics* 25: 682-690; Lyons *et al.*, 1997, *Nature Genetics* 15: 47-56; O'Brien *et al.*, 1997, *Trends in Genetics* 13(10): 393-399; Carver and Stubbs, 1997, *Genome Research* 7:1123-1137; all of which are incorporated by reference herein).

The invention also encompasses allelic variants of the disclosed polynucleotides or proteins; that is, naturally-occurring alternative forms of the isolated polynucleotides which also encode proteins which are identical or have significantly similar sequences to those encoded by the disclosed polynucleotides. Preferably, allelic variants have at least 60% sequence identity
5 (more preferably, at least 75% identity; most preferably at least 90% identity) with the given polynucleotide, where sequence identity is determined by comparing the nucleotide sequences of the polynucleotides when aligned so as to maximize overlap and identity while minimizing sequence gaps. Allelic variants may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic
10 acid source from individuals of the appropriate species.

The invention also includes polynucleotides with sequences complementary to those of the polynucleotides disclosed herein.

The present invention also includes polynucleotides that hybridize under reduced stringency conditions, more preferably stringent conditions, and most preferably highly stringent
15 conditions, to polynucleotides described herein. Examples of stringency conditions are shown in the table below: highly stringent conditions are those that are at least as stringent as, for example, conditions A-F; stringent conditions are at least as stringent as, for example, conditions G-L; and reduced stringency conditions are at least as stringent as, for example, conditions M-R.

	Stringency Condition	Polynucleotide Hybrid	Hybrid Length (bp) [‡]	Hybridization Temperature and Buffer [†]	Wash Temperature and Buffer [†]
5	A	DNA:DNA	≥ 50	65°C; 1xSSC -or- 42°C; 1xSSC, 50% formamide	65°C; 0.3xSSC
	B	DNA:DNA	<50	T _B *; 1xSSC	T _B *; 1xSSC
	C	DNA:RNA	≥ 50	67°C; 1xSSC -or- 45°C; 1xSSC, 50% formamide	67°C; 0.3xSSC
	D	DNA:RNA	<50	T _D *; 1xSSC	T _D *; 1xSSC
	E	RNA:RNA	≥ 50	70°C; 1xSSC -or- 50°C; 1xSSC, 50% formamide	70°C; 0.3xSSC
	F	RNA:RNA	<50	T _F *; 1xSSC	T _F *; 1xSSC
10	G	DNA:DNA	≥ 50	65°C; 4xSSC -or- 42°C; 4xSSC, 50% formamide	65°C; 1xSSC
	H	DNA:DNA	<50	T _H *; 4xSSC	T _H *; 4xSSC
	I	DNA:RNA	≥ 50	67°C; 4xSSC -or- 45°C; 4xSSC, 50% formamide	67°C; 1xSSC
	J	DNA:RNA	<50	T _J *; 4xSSC	T _J *; 4xSSC
	K	RNA:RNA	≥ 50	70°C; 4xSSC -or- 50°C; 4xSSC, 50% formamide	67°C; 1xSSC
	L	RNA:RNA	<50	T _L *; 2xSSC	T _L *; 2xSSC
15	M	DNA:DNA	≥ 50	50°C; 4xSSC -or- 40°C; 6xSSC, 50% formamide	50°C; 2xSSC
	N	DNA:DNA	<50	T _N *; 6xSSC	T _N *; 6xSSC
	O	DNA:RNA	≥ 50	55°C; 4xSSC -or- 42°C; 6xSSC, 50% formamide	55°C; 2xSSC
	P	DNA:RNA	<50	T _P *; 6xSSC	T _P *; 6xSSC
	Q	RNA:RNA	≥ 50	60°C; 4xSSC -or- 45°C; 6xSSC, 50% formamide	60°C; 2xSSC
	R	RNA:RNA	<50	T _R *; 4xSSC	T _R *; 4xSSC

[‡]: The hybrid length is that anticipated for the hybridized region(s) of the hybridizing polynucleotides. When hybridizing a polynucleotide to a target polynucleotide of unknown sequence, the hybrid length is assumed to be that of the hybridizing polynucleotide. When polynucleotides of known sequence are hybridized, the hybrid length can be determined by aligning the sequences of the polynucleotides and identifying the region or regions of optimal sequence complementarity.

[†]: SSPE (1xSSPE is 0.15M NaCl, 10mM NaH₂PO₄, and 1.25mM EDTA, pH 7.4) can be substituted for SSC (1xSSC is 0.15M NaCl and 15mM sodium citrate) in the hybridization and wash buffers; washes are performed for 15 minutes after hybridization is complete.

*T_B - T_R: The hybridization temperature for hybrids anticipated to be less than 50 base pairs in length should be 5-10°C less than the melting temperature (T_m) of the hybrid, where T_m is determined according to the following equations. For hybrids less than 18 base pairs in length, T_m(°C) = 2(# of A + T bases) + 4(# of G + C bases). For hybrids between 18 and 49 base pairs in length, T_m(°C) = 81.5 + 16.6(log₁₀[Na⁺]) + 0.41(%G+C) - (600/N), where N is the number of bases in the hybrid, and [Na⁺] is the concentration of sodium ions in the hybridization buffer ([Na⁺] for 1xSSC = 0.165 M).

Additional examples of stringency conditions for polynucleotide hybridization are provided in Sambrook, J., E.F. Fritsch, and T. Maniatis, 1989, *Molecular Cloning: A Laboratory*

Manual, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, chapters 9 and 11, and *Current Protocols in Molecular Biology*, 1995, F.M. Ausubel et al., eds., John Wiley & Sons, Inc., sections 2.10 and 6.3-6.4, incorporated herein by reference.

Preferably, each such hybridizing polynucleotide has a length that is at least 25% (more preferably at least 50%, and most preferably at least 75%) of the length of the polynucleotide of the present invention to which it hybridizes, and has at least 60% sequence identity (more preferably, at least 75% identity; most preferably at least 90% or 95% identity) with the polynucleotide of the present invention to which it hybridizes, where sequence identity is determined by comparing the sequences of the hybridizing polynucleotides when aligned so as to maximize overlap and identity while minimizing sequence gaps.

The isolated polynucleotide encoding the protein of the invention may be operably linked to an expression control sequence such as the pMT2 or pED expression vectors disclosed in Kaufman *et al.*, *Nucleic Acids Res.* 19, 4485-4490 (1991), in order to produce the protein recombinantly. Many suitable expression control sequences are known in the art. General methods of expressing recombinant proteins are also known and are exemplified in R. Kaufman, *Methods in Enzymology* 185, 537-566 (1990). As defined herein "operably linked" means that the isolated polynucleotide of the invention and an expression control sequence are situated within a vector or cell in such a way that the protein is expressed by a host cell which has been transformed (transfected) with the ligated polynucleotide/expression control sequence.

A number of types of cells may act as suitable host cells for expression of the protein. Mammalian host cells include, for example, monkey COS cells, Chinese Hamster Ovary (CHO) cells, human kidney 293 cells, human epidermal A431 cells, human Colo205 cells, 3T3 cells, CV-1 cells, other transformed primate cell lines, normal diploid cells, cell strains derived from *in vitro* culture of primary tissue, primary explants, HeLa cells, mouse L cells, BHK, HL-60, U937, HaK or Jurkat cells.

Alternatively, it may be possible to produce the protein in lower eukaryotes such as yeast or in prokaryotes such as bacteria. Potentially suitable yeast strains include *Saccharomyces cerevisiae*, *Schizosaccharomyces pombe*, *Kluyveromyces* strains, *Candida*, or any yeast strain capable of expressing heterologous proteins. Potentially suitable bacterial strains include *Escherichia coli*, *Bacillus subtilis*, *Salmonella typhimurium*, or any bacterial strain capable of expressing heterologous proteins. If the protein is made in yeast or bacteria, it may be necessary to modify the protein produced therein, for example by phosphorylation or glycosylation of the appropriate sites, in order to obtain the functional protein. Such covalent attachments may be accomplished using known chemical or enzymatic methods.

The protein may also be produced by operably linking the isolated polynucleotide of the invention to suitable control sequences in one or more insect expression vectors, and employing an insect expression system. Materials and methods for baculovirus/insect cell expression systems are commercially available in kit form from, e.g., Invitrogen, San Diego, California, U.S.A. (the
5 MaxBac® kit), and such methods are well known in the art, as described in Summers and Smith, Texas Agricultural Experiment Station Bulletin No. 1555 (1987), incorporated herein by reference. As used herein, an insect cell capable of expressing a polynucleotide of the present invention is "transformed."

The protein of the invention may be prepared by culturing transformed host cells under
10 culture conditions suitable to express the recombinant protein. The resulting expressed protein may then be purified from such culture (i.e., from culture medium or cell extracts) using known purification processes, such as gel filtration and ion exchange chromatography. The purification of the protein may also include an affinity column containing agents which will bind to the protein; one or more column steps over such affinity resins as concanavalin A-agarose, heparin-
15 toyopearl® or Cibacrom blue 3GA Sepharose®; one or more steps involving hydrophobic interaction chromatography using such resins as phenyl ether, butyl ether, or propyl ether; or immunoaffinity chromatography.

Alternatively, the protein of the invention may also be expressed in a form which will facilitate purification. For example, it may be expressed as a fusion protein, such as those of
20 maltose binding protein (MBP), glutathione-S-transferase (GST) or thioredoxin (TRX). Kits for expression and purification of such fusion proteins are commercially available from New England BioLabs (Beverly, MA), Pharmacia (Piscataway, NJ) and Invitrogen Corporation (Carlsbad, CA), respectively. The protein can also be tagged with an epitope and subsequently purified by using a specific antibody directed to such epitope. One such epitope ("Flag") is commercially available
25 from the Eastman Kodak Company (New Haven, CT).

Finally, one or more reverse-phase high performance liquid chromatography (RP-HPLC) steps employing hydrophobic RP-HPLC media, e.g., silica gel having pendant methyl or other aliphatic groups, can be employed to further purify the protein. Some or all of the foregoing purification steps, in various combinations, can also be employed to provide a substantially
30 homogeneous isolated recombinant protein. The protein thus purified is substantially free of other mammalian proteins and is defined in accordance with the present invention as an "isolated protein."

The protein of the invention may also be expressed as a product of transgenic animals, e.g., as a component of the milk of transgenic cows, goats, pigs, or sheep which are characterized
35 by somatic or germ cells containing a nucleotide sequence encoding the protein.

The protein may also be produced by known conventional chemical synthesis. Methods for constructing the proteins of the present invention by synthetic means are known to those skilled in the art. The synthetically-constructed protein sequences, by virtue of sharing primary, secondary or tertiary structural and/or conformational characteristics with proteins may possess biological properties in common therewith, including protein activity. Thus, they may be employed as biologically active or immunological substitutes for natural, purified proteins in screening of therapeutic compounds and in immunological processes for the development of antibodies.

The proteins provided herein also include proteins characterized by amino acid sequences similar to those of purified proteins but into which modification are naturally provided or deliberately engineered. For example, modifications in the peptide or DNA sequences can be made by those skilled in the art using known techniques. Modifications of interest in the protein sequences may include the alteration, substitution, replacement, insertion or deletion of a selected amino acid residue in the coding sequence. For example, one or more of the cysteine residues may be deleted or replaced with another amino acid to alter the conformation of the molecule. Techniques for such alteration, substitution, replacement, insertion or deletion are well known to those skilled in the art (see, e.g., U.S. Patent No. 4,518,584). Preferably, such alteration, substitution, replacement, insertion or deletion retains the desired activity of the protein.

Other fragments and derivatives of the sequences of proteins which would be expected to retain protein activity in whole or in part and may thus be useful for screening or other immunological methodologies may also be easily made by those skilled in the art given the disclosures herein. Such modifications are believed to be encompassed by the present invention.

USES AND BIOLOGICAL ACTIVITY

The polynucleotides and proteins of the present invention are expected to exhibit one or more of the uses or biological activities (including those associated with assays cited herein) identified below. Uses or activities described for proteins of the present invention may be provided by administration or use of such proteins or by administration or use of polynucleotides encoding such proteins (such as, for example, in gene therapies or vectors suitable for introduction of DNA).

Research Uses and Utilities

The polynucleotides provided by the present invention can be used by the research community for various purposes. The polynucleotides can be used to express recombinant protein for analysis, characterization or therapeutic use; as markers for tissues in which the corresponding

protein is preferentially expressed (either constitutively or at a particular stage of tissue differentiation or development or in disease states); as molecular weight markers on Southern gels; as chromosome markers or tags (when labeled) to identify chromosomes or to map related gene positions; to compare with endogenous DNA sequences in patients to identify potential genetic disorders; as probes to hybridize and thus discover novel, related DNA sequences; as a source of information to derive PCR primers for genetic fingerprinting; as a probe to "subtract-out" known sequences in the process of discovering other novel polynucleotides; for selecting and making oligomers for attachment to a "gene chip" or other support, including for examination of expression patterns; to raise anti-protein antibodies using DNA immunization techniques; and as an antigen to raise anti-DNA antibodies or elicit another immune response. Where the polynucleotide encodes a protein which binds or potentially binds to another protein (such as, for example, in a receptor-ligand interaction), the polynucleotide can also be used in interaction trap assays (such as, for example, those described in Gyuris *et al.*, 1993, *Cell* 75: 791-803 and in Rossi *et al.*, 1997, *Proc. Natl. Acad. Sci. USA* 94: 8405-8410, all of which are incorporated by reference herein) to identify polynucleotides encoding the other protein with which binding occurs or to identify inhibitors of the binding interaction.

The proteins provided by the present invention can similarly be used in assay to determine biological activity, including in a panel of multiple proteins for high-throughput screening; to raise antibodies or to elicit another immune response; as a reagent (including the labeled reagent) in assays designed to quantitatively determine levels of the protein (or its receptor) in biological fluids; as markers for tissues in which the corresponding protein is preferentially expressed (either constitutively or at a particular stage of tissue differentiation or development or in a disease state); and, of course, to isolate correlative receptors or ligands. Where the protein binds or potentially binds to another protein (such as, for example, in a receptor-ligand interaction), the protein can be used to identify the other protein with which binding occurs or to identify inhibitors of the binding interaction. Proteins involved in these binding interactions can also be used to screen for peptide or small molecule inhibitors or agonists of the binding interaction.

Any or all of these research utilities are capable of being developed into reagent grade or kit format for commercialization as research products.

Methods for performing the uses listed above are well known to those skilled in the art. References disclosing such methods include without limitation "Molecular Cloning: A Laboratory Manual", 2d ed., Cold Spring Harbor Laboratory Press, Sambrook, J., E.F. Fritsch and T. Maniatis eds., 1989, and "Methods in Enzymology: Guide to Molecular Cloning Techniques", Academic Press, Berger, S.L. and A.R. Kimmel eds., 1987.

Nutritional Uses

Polynucleotides and proteins of the present invention can also be used as nutritional sources or supplements. Such uses include without limitation use as a protein or amino acid supplement, use as a carbon source, use as a nitrogen source and use as a source of carbohydrate.

- 5 In such cases the protein or polynucleotide of the invention can be added to the feed of a particular organism or can be administered as a separate solid or liquid preparation, such as in the form of powder, pills, solutions, suspensions or capsules. In the case of microorganisms, the protein or polynucleotide of the invention can be added to the medium in or on which the microorganism is cultured.

10

Cytokine and Cell Proliferation/Differentiation Activity

A protein of the present invention may exhibit cytokine, cell proliferation (either inducing or inhibiting) or cell differentiation (either inducing or inhibiting) activity or may induce production of other cytokines in certain cell populations. Many protein factors discovered to date,

- 15 including all known cytokines, have exhibited activity in one or more factor-dependent cell proliferation assays, and hence the assays serve as a convenient confirmation of cytokine activity. The activity of a protein of the present invention is evidenced by any one of a number of routine factor dependent cell proliferation assays for cell lines including, without limitation, 32D, DA2, DA1G, T10, B9, B9/11, BaF3, MC9/G, M+ (preB M+), 2E8, RB5, DA1, 123, T1165, HT2,
20 CTLL2, TF-1, Mo7e and CMK. The activity of a protein of the invention may, among other means, be measured by the following methods:

Assays for T-cell or thymocyte proliferation include without limitation those described in: Current Protocols in Immunology, Ed by J. E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 3, In
25 Vitro assays for Mouse Lymphocyte Function 3.1-3.19; Chapter 7, Immunologic studies in Humans); Takai et al., J. Immunol. 137:3494-3500, 1986; Bertagnolli et al., J. Immunol. 145:1706-1712, 1990; Bertagnolli et al., Cellular Immunology 133:327-341, 1991; Bertagnolli, et al., J. Immunol. 149:3778-3783, 1992; Bowman et al., J. Immunol. 152: 1756-1761, 1994.

- 30 Assays for cytokine production and/or proliferation of spleen cells, lymph node cells or thymocytes include, without limitation, those described in: Polyclonal T cell stimulation, Kruisbeek, A.M. and Shevach, E.M. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 3.12.1-3.12.14, John Wiley and Sons, Toronto. 1994; and Measurement of mouse and human Interferon γ , Schreiber, R.D. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.8.1-6.8.8, John Wiley and Sons, Toronto. 1994.

Assays for proliferation and differentiation of hematopoietic and lymphopoietic cells include, without limitation, those described in: Measurement of Human and Murine Interleukin 2 and Interleukin 4, Bottomly, K., Davis, L.S. and Lipsky, P.E. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.3.1-6.3.12, John Wiley and Sons, Toronto. 1991; 5 deVries et al., J. Exp. Med. 173:1205-1211, 1991; Moreau et al., Nature 336:690-692, 1988; Greenberger et al., Proc. Natl. Acad. Sci. U.S.A. 80:2931-2938, 1983; Measurement of mouse and human interleukin 6 - Nordan, R. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.6.1-6.6.5, John Wiley and Sons, Toronto. 1991; Smith et al., Proc. Natl. Acad. Sci. U.S.A. 83:1857-1861, 1986; Measurement of human Interleukin 11 - Bennett, F., Giannotti, J., Clark, 10 S.C. and Turner, K. J. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.15.1 John Wiley and Sons, Toronto. 1991; Measurement of mouse and human Interleukin 9 - Ciarletta, A., Giannotti, J., Clark, S.C. and Turner, K.J. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 6.13.1, John Wiley and Sons, Toronto. 1991.

Assays for T-cell clone responses to antigens (which will identify, among others, proteins 15 that affect APC-T cell interactions as well as direct T-cell effects by measuring proliferation and cytokine production) include, without limitation, those described in: Current Protocols in Immunology, Ed by J. E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 3, In Vitro assays for Mouse Lymphocyte Function; Chapter 6, Cytokines and their cellular receptors; Chapter 7, Immunologic 20 studies in Humans); Weinberger et al., Proc. Natl. Acad. Sci. USA 77:6091-6095, 1980; Weinberger et al., Eur. J. Immun. 11:405-411, 1981; Takai et al., J. Immunol. 137:3494-3500, 1986; Takai et al., J. Immunol. 140:508-512, 1988.

Immune Stimulating or Suppressing Activity

25 A protein of the present invention may also exhibit immune stimulating or immune suppressing activity, including without limitation the activities for which assays are described herein. A protein may be useful in the treatment of various immune deficiencies and disorders (including severe combined immunodeficiency (SCID)), e.g., in regulating (up or down) growth and proliferation of T and/or B lymphocytes, as well as effecting the cytolytic activity of NK cells 30 and other cell populations. These immune deficiencies may be genetic or be caused by viral (e.g., HIV) as well as bacterial or fungal infections, or may result from autoimmune disorders. More specifically, infectious diseases caused by viral, bacterial, fungal or other infection may be treatable using a protein of the present invention, including infections by HIV, hepatitis viruses, herpesviruses, mycobacteria, Leishmania spp., malaria spp. and various fungal infections such as

candidiasis. Of course, in this regard, a protein of the present invention may also be useful where a boost to the immune system generally may be desirable, *i.e.*, in the treatment of cancer.

Autoimmune disorders which may be treated using a protein of the present invention include, for example, connective tissue disease, multiple sclerosis, systemic lupus erythematosus, 5 rheumatoid arthritis, autoimmune pulmonary inflammation, Guillain-Barre syndrome, autoimmune thyroiditis, insulin dependent diabetes mellitus, myasthenia gravis, graft-versus-host disease and autoimmune inflammatory eye disease. Such a protein of the present invention may also to be useful in the treatment of allergic reactions and conditions, such as asthma (particularly allergic asthma) or other respiratory problems. Other conditions, in which immune suppression 10 is desired (including, for example, organ transplantation), may also be treatable using a protein of the present invention.

Using the proteins of the invention it may also be possible to regulate immune responses in a number of ways. Down regulation may be in the form of inhibiting or blocking an immune response already in progress or may involve preventing the induction of an immune response. The 15 functions of activated T cells may be inhibited by suppressing T cell responses or by inducing specific tolerance in T cells, or both. Immunosuppression of T cell responses is generally an active, non-antigen-specific, process which requires continuous exposure of the T cells to the suppressive agent. Tolerance, which involves inducing non-responsiveness or anergy in T cells, is distinguishable from immunosuppression in that it is generally antigen-specific and persists 20 after exposure to the tolerizing agent has ceased. Operationally, tolerance can be demonstrated by the lack of a T cell response upon reexposure to specific antigen in the absence of the tolerizing agent.

Down regulating or preventing one or more antigen functions (including without limitation B lymphocyte antigen functions (such as, for example, B7)), *e.g.*, preventing high level 25 lymphokine synthesis by activated T cells, will be useful in situations of tissue, skin and organ transplantation and in graft-versus-host disease (GVHD). For example, blockage of T cell function should result in reduced tissue destruction in tissue transplantation. Typically, in tissue transplants, rejection of the transplant is initiated through its recognition as foreign by T cells, followed by an immune reaction that destroys the transplant. The administration of a molecule 30 which inhibits or blocks interaction of a B7 lymphocyte antigen with its natural ligand(s) on immune cells (such as a soluble, monomeric form of a peptide having B7-2 activity alone or in conjunction with a monomeric form of a peptide having an activity of another B lymphocyte antigen (*e.g.*, B7-1, B7-3) or blocking antibody), prior to transplantation can lead to the binding of the molecule to the natural ligand(s) on the immune cells without transmitting the 35 corresponding costimulatory signal. Blocking B lymphocyte antigen function in this matter

prevents cytokine synthesis by immune cells, such as T cells, and thus acts as an immunosuppressant. Moreover, the lack of costimulation may also be sufficient to anergize the T cells, thereby inducing tolerance in a subject. Induction of long-term tolerance by B lymphocyte antigen-blocking reagents may avoid the necessity of repeated administration of these blocking reagents. To achieve sufficient immunosuppression or tolerance in a subject, it may also be necessary to block the function of a combination of B lymphocyte antigens.

The efficacy of particular blocking reagents in preventing organ transplant rejection or GVHD can be assessed using animal models that are predictive of efficacy in humans. Examples of appropriate systems which can be used include allogeneic cardiac grafts in rats and xenogeneic pancreatic islet cell grafts in mice, both of which have been used to examine the immunosuppressive effects of CTLA4Ig fusion proteins *in vivo* as described in Lenschow *et al.*, Science 257:789-792 (1992) and Turka *et al.*, Proc. Natl. Acad. Sci USA, 89:11102-11105 (1992). In addition, murine models of GVHD (see Paul ed., Fundamental Immunology, Raven Press, New York, 1989, pp. 846-847) can be used to determine the effect of blocking B lymphocyte antigen function *in vivo* on the development of that disease.

Blocking antigen function may also be therapeutically useful for treating autoimmune diseases. Many autoimmune disorders are the result of inappropriate activation of T cells that are reactive against self tissue and which promote the production of cytokines and autoantibodies involved in the pathology of the diseases. Preventing the activation of autoreactive T cells may reduce or eliminate disease symptoms. Administration of reagents which block costimulation of T cells by disrupting receptor:ligand interactions of B lymphocyte antigens can be used to inhibit T cell activation and prevent production of autoantibodies or T cell-derived cytokines which may be involved in the disease process. Additionally, blocking reagents may induce antigen-specific tolerance of autoreactive T cells which could lead to long-term relief from the disease. The efficacy of blocking reagents in preventing or alleviating autoimmune disorders can be determined using a number of well-characterized animal models of human autoimmune diseases. Examples include murine experimental autoimmune encephalitis, systemic lupus erythematosus in MRL/lpr/lpr mice or NZB hybrid mice, murine autoimmune collagen arthritis, diabetes mellitus in NOD mice and BB rats, and murine experimental myasthenia gravis (see Paul ed., Fundamental Immunology, Raven Press, New York, 1989, pp. 840-856).

Upregulation of an antigen function (preferably a B lymphocyte antigen function), as a means of up regulating immune responses, may also be useful in therapy. Upregulation of immune responses may be in the form of enhancing an existing immune response or eliciting an initial immune response. For example, enhancing an immune response through stimulating B lymphocyte antigen function may be useful in cases of viral infection. In addition, systemic viral

diseases such as influenza, the common cold, and encephalitis might be alleviated by the administration of stimulatory forms of B lymphocyte antigens systemically.

Alternatively, anti-viral immune responses may be enhanced in an infected patient by removing T cells from the patient, costimulating the T cells *in vitro* with viral antigen-pulsed
5 APCs either expressing a peptide of the present invention or together with a stimulatory form of a soluble peptide of the present invention and reintroducing the *in vitro* activated T cells into the patient. Another method of enhancing anti-viral immune responses would be to isolate infected cells from a patient, transfect them with a nucleic acid encoding a protein of the present invention as described herein such that the cells express all or a portion of the protein on their surface, and
10 reintroduce the transfected cells into the patient. The infected cells would now be capable of delivering a costimulatory signal to, and thereby activate, T cells *in vivo*.

In another application, up regulation or enhancement of antigen function (preferably B lymphocyte antigen function) may be useful in the induction of tumor immunity. Tumor cells (e.g., sarcoma, melanoma, lymphoma, leukemia, neuroblastoma, carcinoma) transfected with a
15 nucleic acid encoding at least one peptide of the present invention can be administered to a subject to overcome tumor-specific tolerance in the subject. If desired, the tumor cell can be transfected to express a combination of peptides. For example, tumor cells obtained from a patient can be transfected *ex vivo* with an expression vector directing the expression of a peptide having B7-2-like activity alone, or in conjunction with a peptide having B7-1-like activity and/or B7-3-like
20 activity. The transfected tumor cells are returned to the patient to result in expression of the peptides on the surface of the transfected cell. Alternatively, gene therapy techniques can be used to target a tumor cell for transfection *in vivo*.

The presence of the peptide of the present invention having the activity of a B lymphocyte antigen(s) on the surface of the tumor cell provides the necessary costimulation signal to T cells
25 to induce a T cell mediated immune response against the transfected tumor cells. In addition, tumor cells which lack MHC class I or MHC class II molecules, or which fail to reexpress sufficient amounts of MHC class I or MHC class II molecules, can be transfected with nucleic acid encoding all or a portion of (e.g., a cytoplasmic-domain truncated portion) of an MHC class I α chain protein and β_2 microglobulin protein or an MHC class II α chain protein and an MHC
30 class II β chain protein to thereby express MHC class I or MHC class II proteins on the cell surface. Expression of the appropriate class I or class II MHC in conjunction with a peptide having the activity of a B lymphocyte antigen (e.g., B7-1, B7-2, B7-3) induces a T cell mediated immune response against the transfected tumor cell. Optionally, a gene encoding an antisense construct which blocks expression of an MHC class II associated protein, such as the invariant
35 chain, can also be cotransfected with a DNA encoding a peptide having the activity of a B

lymphocyte antigen to promote presentation of tumor associated antigens and induce tumor specific immunity. Thus, the induction of a T cell mediated immune response in a human subject may be sufficient to overcome tumor-specific tolerance in the subject.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Suitable assays for thymocyte or splenocyte cytotoxicity include, without limitation, those described in: *Current Protocols in Immunology*, Ed by J. E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 3, *In Vitro* assays for Mouse Lymphocyte Function 3.1-3.19; Chapter 7, *Immunologic studies in Humans*); Herrmann et al., *Proc. Natl. Acad. Sci. USA* 78:2488-2492, 1981; Herrmann et al., *J. Immunol.* 128:1968-1974, 1982; Handa et al., *J. Immunol.* 135:1564-1572, 1985; Takai et al., *J. Immunol.* 137:3494-3500, 1986; Takai et al., *J. Immunol.* 140:508-512, 1988; Herrmann et al., *Proc. Natl. Acad. Sci. USA* 78:2488-2492, 1981; Herrmann et al., *J. Immunol.* 128:1968-1974, 1982; Handa et al., *J. Immunol.* 135:1564-1572, 1985; Takai et al., *J. Immunol.* 137:3494-3500, 1986; Bowman et al., *J. Virology* 61:1992-1998; Takai et al., *J. Immunol.* 140:508-512, 1988; Bertagnolli et al., *Cellular Immunology* 133:327-341, 1991; Brown et al., *J. Immunol.* 153:3079-3092, 1994.

Assays for T-cell-dependent immunoglobulin responses and isotype switching (which will identify, among others, proteins that modulate T-cell dependent antibody responses and that affect Th1/Th2 profiles) include, without limitation, those described in: Maliszewski, *J. Immunol.* 144:3028-3033, 1990; and Assays for B cell function: *In vitro* antibody production, Mond, J.J. and Brunswick, M. In *Current Protocols in Immunology*. J.E.e.a. Coligan eds. Vol 1 pp. 3.8.1-3.8.16, John Wiley and Sons, Toronto. 1994.

Mixed lymphocyte reaction (MLR) assays (which will identify, among others, proteins that generate predominantly Th1 and CTL responses) include, without limitation, those described in: *Current Protocols in Immunology*, Ed by J. E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 3, *In Vitro* assays for Mouse Lymphocyte Function 3.1-3.19; Chapter 7, *Immunologic studies in Humans*); Takai et al., *J. Immunol.* 137:3494-3500, 1986; Takai et al., *J. Immunol.* 140:508-512, 1988; Bertagnolli et al., *J. Immunol.* 149:3778-3783, 1992.

Dendritic cell-dependent assays (which will identify, among others, proteins expressed by dendritic cells that activate naive T-cells) include, without limitation, those described in: Guery et al., *J. Immunol.* 134:536-544, 1995; Inaba et al., *Journal of Experimental Medicine* 173:549-559, 1991; Macatonia et al., *Journal of Immunology* 154:5071-5079, 1995; Porgador et al., *Journal of Experimental Medicine* 182:255-260, 1995; Nair et al., *Journal of Virology*

67:4062-4069, 1993; Huang et al., Science 264:961-965, 1994; Macatonia et al., Journal of Experimental Medicine 169:1255-1264, 1989; Bhardwaj et al., Journal of Clinical Investigation 94:797-807, 1994; and Inaba et al., Journal of Experimental Medicine 172:631-640, 1990.

Assays for lymphocyte survival/apoptosis (which will identify, among others, proteins that prevent apoptosis after superantigen induction and proteins that regulate lymphocyte homeostasis) include, without limitation, those described in: Darzynkiewicz et al., Cytometry 13:795-808, 1992; Gorczyca et al., Leukemia 7:659-670, 1993; Gorczyca et al., Cancer Research 53:1945-1951, 1993; Itoh et al., Cell 66:233-243, 1991; Zacharchuk, Journal of Immunology 145:4037-4045, 1990; Zamai et al., Cytometry 14:891-897, 1993; Gorczyca et al., International Journal of Oncology 1:639-648, 1992.

Assays for proteins that influence early steps of T-cell commitment and development include, without limitation, those described in: Antica et al., Blood 84:111-117, 1994; Fine et al., Cellular Immunology 155:111-122, 1994; Galy et al., Blood 85:2770-2778, 1995; Toki et al., Proc. Nat. Acad Sci. USA 88:7548-7551, 1991.

Hematopoiesis Regulating Activity

A protein of the present invention may be useful in regulation of hematopoiesis and, consequently, in the treatment of myeloid or lymphoid cell deficiencies. Even marginal biological activity in support of colony forming cells or of factor-dependent cell lines indicates involvement in regulating hematopoiesis, e.g. in supporting the growth and proliferation of erythroid progenitor cells alone or in combination with other cytokines, thereby indicating utility, for example, in treating various anemias or for use in conjunction with irradiation/chemotherapy to stimulate the production of erythroid precursors and/or erythroid cells; in supporting the growth and proliferation of myeloid cells such as granulocytes and monocytes/macrophages (i.e., traditional CSF activity) useful, for example, in conjunction with chemotherapy to prevent or treat consequent myelo-suppression; in supporting the growth and proliferation of megakaryocytes and consequently of platelets thereby allowing prevention or treatment of various platelet disorders such as thrombocytopenia, and generally for use in place of or complimentary to platelet transfusions; and/or in supporting the growth and proliferation of hematopoietic stem cells which are capable of maturing to any and all of the above-mentioned hematopoietic cells and therefore find therapeutic utility in various stem cell disorders (such as those usually treated with transplantation, including, without limitation, aplastic anemia and paroxysmal nocturnal hemoglobinuria), as well as in repopulating the stem cell compartment post irradiation/chemotherapy, either *in-vivo* or *ex-vivo* (i.e., in conjunction with bone marrow

transplantation or with peripheral progenitor cell transplantation (homologous or heterologous)) as normal cells or genetically manipulated for gene therapy.

The activity of a protein of the invention may, among other means, be measured by the following methods:

5 Suitable assays for proliferation and differentiation of various hematopoietic lines are cited above.

 Assays for embryonic stem cell differentiation (which will identify, among others, proteins that influence embryonic differentiation hematopoiesis) include, without limitation, those described in: Johansson et al. *Cellular Biology* 15:141-151, 1995; Keller et al., *Molecular and*
10 *Cellular Biology* 13:473-486, 1993; McClanahan et al., *Blood* 81:2903-2915, 1993.

 Assays for stem cell survival and differentiation (which will identify, among others, proteins that regulate lympho-hematopoiesis) include, without limitation, those described in: Methylcellulose colony forming assays, Freshney, M.G. In *Culture of Hematopoietic Cells*. R.I. Freshney, et al. eds. Vol pp. 265-268, Wiley-Liss, Inc., New York, NY. 1994; Hirayama et al.,
15 *Proc. Natl. Acad. Sci. USA* 89:5907-5911, 1992; Primitive hematopoietic colony forming cells with high proliferative potential, McNiece, I.K. and Briddell, R.A. In *Culture of Hematopoietic Cells*. R.I. Freshney, et al. eds. Vol pp. 23-39, Wiley-Liss, Inc., New York, NY. 1994; Neben et al., *Experimental Hematology* 22:353-359, 1994; Cobblestone area forming cell assay, Ploemacher, R.E. In *Culture of Hematopoietic Cells*. R.I. Freshney, et al. eds. Vol pp. 1-21,
20 Wiley-Liss, Inc., New York, NY. 1994; Long term bone marrow cultures in the presence of stromal cells, Spooncer, E., Dexter, M. and Allen, T. In *Culture of Hematopoietic Cells*. R.I. Freshney, et al. eds. Vol pp. 163-179, Wiley-Liss, Inc., New York, NY. 1994; Long term culture initiating cell assay, Sutherland, H.J. In *Culture of Hematopoietic Cells*. R.I. Freshney, et al. eds. Vol pp. 139-162, Wiley-Liss, Inc., New York, NY. 1994.

25

Tissue Growth Activity

A protein of the present invention also may have utility in compositions used for bone, cartilage, tendon, ligament and/or nerve tissue growth or regeneration, as well as for wound healing and tissue repair and replacement, and in the treatment of burns, incisions and ulcers.

30 A protein of the present invention, which induces cartilage and/or bone growth in circumstances where bone is not normally formed, has application in the healing of bone fractures and cartilage damage or defects in humans and other animals. Such a preparation employing a protein of the invention may have prophylactic use in closed as well as open fracture reduction and also in the improved fixation of artificial joints. *De novo* bone formation induced by an

osteogenic agent contributes to the repair of congenital, trauma induced, or oncologic resection induced craniofacial defects, and also is useful in cosmetic plastic surgery.

A protein of this invention may also be used in the treatment of periodontal disease, and in other tooth repair processes. Such agents may provide an environment to attract bone-forming cells, stimulate growth of bone-forming cells or induce differentiation of progenitors of bone-forming cells. A protein of the invention may also be useful in the treatment of osteoporosis or osteoarthritis, such as through stimulation of bone and/or cartilage repair or by blocking inflammation or processes of tissue destruction (collagenase activity, osteoclast activity, etc.) mediated by inflammatory processes.

10 Another category of tissue regeneration activity that may be attributable to the protein of the present invention is tendon/ligament formation. A protein of the present invention, which induces tendon/ligament-like tissue or other tissue formation in circumstances where such tissue is not normally formed, has application in the healing of tendon or ligament tears, deformities and other tendon or ligament defects in humans and other animals. Such a preparation employing a
15 tendon/ligament-like tissue inducing protein may have prophylactic use in preventing damage to tendon or ligament tissue, as well as use in the improved fixation of tendon or ligament to bone or other tissues, and in repairing defects to tendon or ligament tissue. De novo tendon/ligament-like tissue formation induced by a composition of the present invention contributes to the repair of congenital, trauma induced, or other tendon or ligament defects of other origin, and is also
20 useful in cosmetic plastic surgery for attachment or repair of tendons or ligaments. The compositions of the present invention may provide an environment to attract tendon- or ligament-forming cells, stimulate growth of tendon- or ligament-forming cells, induce differentiation of progenitors of tendon- or ligament-forming cells, or induce growth of tendon/ligament cells or progenitors *ex vivo* for return *in vivo* to effect tissue repair. The compositions of the invention
25 may also be useful in the treatment of tendinitis, carpal tunnel syndrome and other tendon or ligament defects. The compositions may also include an appropriate matrix and/or sequestering agent as a carrier as is well known in the art.

The protein of the present invention may also be useful for proliferation of neural cells and for regeneration of nerve and brain tissue, *i.e.* for the treatment of central and peripheral
30 nervous system diseases and neuropathies, as well as mechanical and traumatic disorders, which involve degeneration, death or trauma to neural cells or nerve tissue. More specifically, a protein may be used in the treatment of diseases of the peripheral nervous system, such as peripheral nerve injuries, peripheral neuropathy and localized neuropathies, and central nervous system diseases, such as Alzheimer's, Parkinson's disease, Huntington's disease, amyotrophic lateral
35 sclerosis, and Shy-Drager syndrome. Further conditions which may be treated in accordance with

the present invention include mechanical and traumatic disorders, such as spinal cord disorders, head trauma and cerebrovascular diseases such as stroke. Peripheral neuropathies resulting from chemotherapy or other medical therapies may also be treatable using a protein of the invention.

Proteins of the invention may also be useful to promote better or faster closure of non-healing wounds, including without limitation pressure ulcers, ulcers associated with vascular insufficiency, surgical and traumatic wounds, and the like.

It is expected that a protein of the present invention may also exhibit activity for generation or regeneration of other tissues, such as organs (including, for example, pancreas, liver, intestine, kidney, skin, endothelium), muscle (smooth, skeletal or cardiac) and vascular (including vascular endothelium) tissue, or for promoting the growth of cells comprising such tissues. Part of the desired effects may be by inhibition or modulation of fibrotic scarring to allow normal tissue to regenerate. A protein of the invention may also exhibit angiogenic activity.

A protein of the present invention may also be useful for gut protection or regeneration and treatment of lung or liver fibrosis, reperfusion injury in various tissues, and conditions resulting from systemic cytokine damage.

A protein of the present invention may also be useful for promoting or inhibiting differentiation of tissues described above from precursor tissues or cells; or for inhibiting the growth of tissues described above.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assays for tissue generation activity include, without limitation, those described in: International Patent Publication No. WO95/16035 (bone, cartilage, tendon); International Patent Publication No. WO95/05846 (nerve, neuronal); International Patent Publication No. WO91/07491 (skin, endothelium).

Assays for wound healing activity include, without limitation, those described in: Winter, Epidermal Wound Healing, pps. 71-112 (Maibach, HI and Rovee, DT, eds.), Year Book Medical Publishers, Inc., Chicago, as modified by Eaglstein and Mertz, J. Invest. Dermatol 71:382-84 (1978).

Activin/Inhibin Activity

A protein of the present invention may also exhibit activin- or inhibin-related activities. Inhibins are characterized by their ability to inhibit the release of follicle stimulating hormone (FSH), while activins are characterized by their ability to stimulate the release of follicle stimulating hormone (FSH). Thus, a protein of the present invention, alone or in heterodimers with a member of the inhibin α family, may be useful as a contraceptive based on the ability of

inhibins to decrease fertility in female mammals and decrease spermatogenesis in male mammals. Administration of sufficient amounts of other inhibins can induce infertility in these mammals. Alternatively, the protein of the invention, as a homodimer or as a heterodimer with other protein subunits of the inhibin- β group, may be useful as a fertility inducing therapeutic, based upon the ability of activin molecules in stimulating FSH release from cells of the anterior pituitary. See, for example, United States Patent 4,798,885. A protein of the invention may also be useful for advancement of the onset of fertility in sexually immature mammals, so as to increase the lifetime reproductive performance of domestic animals such as cows, sheep and pigs.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assays for activin/inhibin activity include, without limitation, those described in: Vale et al., Endocrinology 91:562-572, 1972; Ling et al., Nature 321:779-782, 1986; Vale et al., Nature 321:776-779, 1986; Mason et al., Nature 318:659-663, 1985; Forage et al., Proc. Natl. Acad. Sci. USA 83:3091-3095, 1986.

Chemotactic/Chemokinetic Activity

A protein of the present invention may have chemotactic or chemokinetic activity (e.g., act as a chemokine) for mammalian cells, including, for example, monocytes, fibroblasts, neutrophils, T-cells, mast cells, eosinophils, epithelial and/or endothelial cells. Chemotactic and chemokinetic proteins can be used to mobilize or attract a desired cell population to a desired site of action. Chemotactic or chemokinetic proteins provide particular advantages in treatment of wounds and other trauma to tissues, as well as in treatment of localized infections. For example, attraction of lymphocytes, monocytes or neutrophils to tumors or sites of infection may result in improved immune responses against the tumor or infecting agent.

A protein or peptide has chemotactic activity for a particular cell population if it can stimulate, directly or indirectly, the directed orientation or movement of such cell population. Preferably, the protein or peptide has the ability to directly stimulate directed movement of cells. Whether a particular protein has chemotactic activity for a population of cells can be readily determined by employing such protein or peptide in any known assay for cell chemotaxis.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assays for chemotactic activity (which will identify proteins that induce or prevent chemotaxis) consist of assays that measure the ability of a protein to induce the migration of cells across a membrane as well as the ability of a protein to induce the adhesion of one cell population to another cell population. Suitable assays for movement and adhesion include, without limitation,

those described in: Current Protocols in Immunology, Ed by J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W. Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 6.12, Measurement of alpha and beta Chemokines 6.12.1-6.12.28; Taub et al. J. Clin. Invest. 95:1370-1376, 1995; Lind et al. APMIS 103:140-146, 1995; Muller et al Eur. J. Immunol. 25: 1744-1748; Gruber et al. J. of Immunol. 152:5860-5867, 1994; Johnston et al. J. of Immunol. 153: 1762-1768, 1994.

Hemostatic and Thrombolytic Activity

A protein of the invention may also exhibit hemostatic or thrombolytic activity. As a result, such a protein is expected to be useful in treatment of various coagulation disorders (including hereditary disorders, such as hemophilias) or to enhance coagulation and other hemostatic events in treating wounds resulting from trauma, surgery or other causes. A protein of the invention may also be useful for dissolving or inhibiting formation of thromboses and for treatment and prevention of conditions resulting therefrom (such as, for example, infarction of cardiac and central nervous system vessels (e.g., stroke).

The activity of a protein of the invention may, among other means, be measured by the following methods:

Assay for hemostatic and thrombolytic activity include, without limitation, those described in: Linet et al., J. Clin. Pharmacol. 26:131-140, 1986; Burdick et al., Thrombosis Res. 45:413-419, 1987; Humphrey et al., Fibrinolysis 5:71-79 (1991); Schaub, Prostaglandins 35:467-474, 1988.

Receptor/Ligand Activity

A protein of the present invention may also demonstrate activity as receptors, receptor ligands or inhibitors or agonists of receptor/ligand interactions. Examples of such receptors and ligands include, without limitation, cytokine receptors and their ligands, receptor kinases and their ligands, receptor phosphatases and their ligands, receptors involved in cell-cell interactions and their ligands (including without limitation, cellular adhesion molecules (such as selectins, integrins and their ligands) and receptor/ligand pairs involved in antigen presentation, antigen recognition and development of cellular and humoral immune responses). Receptors and ligands are also useful for screening of potential peptide or small molecule inhibitors of the relevant receptor/ligand interaction. A protein of the present invention (including, without limitation, fragments of receptors and ligands) may themselves be useful as inhibitors of receptor/ligand interactions.

The activity of a protein of the invention may, among other means, be measured by the following methods:

Suitable assays for receptor-ligand activity include without limitation those described in: Current Protocols in Immunology, Ed by J.E. Coligan, A.M. Kruisbeek, D.H. Margulies, E.M. Shevach, W. Strober, Pub. Greene Publishing Associates and Wiley-Interscience (Chapter 7.28, Measurement of Cellular Adhesion under static conditions 7.28.1-7.28.22), Takai et al., Proc. Natl. Acad. Sci. USA 84:6864-6868, 1987; Bierer et al., J. Exp. Med. 168:1145-1156, 1988; Rosenstein et al., J. Exp. Med. 169:149-160 1989; Stoltenborg et al., J. Immunol. Methods 175:59-68, 1994; Stitt et al., Cell 80:661-670, 1995.

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Anti-Inflammatory Activity

Proteins of the present invention may also exhibit anti-inflammatory activity. The anti-inflammatory activity may be achieved by providing a stimulus to cells involved in the inflammatory response, by inhibiting or promoting cell-cell interactions (such as, for example, cell adhesion), by inhibiting or promoting chemotaxis of cells involved in the inflammatory process, inhibiting or promoting cell extravasation, or by stimulating or suppressing production of other factors which more directly inhibit or promote an inflammatory response. Proteins exhibiting such activities can be used to treat inflammatory conditions including chronic or acute conditions), including without limitation inflammation associated with infection (such as septic shock, sepsis or systemic inflammatory response syndrome (SIRS)), ischemia-reperfusion injury, endotoxin lethality, arthritis, complement-mediated hyperacute rejection, nephritis, cytokine or chemokine-induced lung injury, inflammatory bowel disease, Crohn's disease or resulting from over production of cytokines such as TNF or IL-1. Proteins of the invention may also be useful to treat anaphylaxis and hypersensitivity to an antigenic substance or material.

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Cadherin/Tumor Invasion Suppressor Activity

Cadherins are calcium-dependent adhesion molecules that appear to play major roles during development, particularly in defining specific cell types. Loss or alteration of normal cadherin expression can lead to changes in cell adhesion properties linked to tumor growth and metastasis. Cadherin malfunction is also implicated in other human diseases, such as pemphigus vulgaris and pemphigus foliaceus (auto-immune blistering skin diseases), Crohn's disease, and some developmental abnormalities.

The cadherin superfamily includes well over forty members, each with a distinct pattern of expression. All members of the superfamily have in common conserved extracellular repeats (cadherin domains), but structural differences are found in other parts of the molecule. The

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cadherin domains bind calcium to form their tertiary structure and thus calcium is required to mediate their adhesion. Only a few amino acids in the first cadherin domain provide the basis for homophilic adhesion; modification of this recognition site can change the specificity of a cadherin so that instead of recognizing only itself, the mutant molecule can now also bind to a different
5 cadherin. In addition, some cadherins engage in heterophilic adhesion with other cadherins.

E-cadherin, one member of the cadherin superfamily, is expressed in epithelial cell types. Pathologically, if E-cadherin expression is lost in a tumor, the malignant cells become invasive and the cancer metastasizes. Transfection of cancer cell lines with polynucleotides expressing E-cadherin has reversed cancer-associated changes by returning altered cell shapes to normal,
10 restoring cells' adhesiveness to each other and to their substrate, decreasing the cell growth rate, and drastically reducing anchorage-independent cell growth. Thus, reintroducing E-cadherin expression reverts carcinomas to a less advanced stage. It is likely that other cadherins have the same invasion suppressor role in carcinomas derived from other tissue types. Therefore, proteins of the present invention with cadherin activity, and polynucleotides of the present invention
15 encoding such proteins, can be used to treat cancer. Introducing such proteins or polynucleotides into cancer cells can reduce or eliminate the cancerous changes observed in these cells by providing normal cadherin expression.

Cancer cells have also been shown to express cadherins of a different tissue type than their origin, thus allowing these cells to invade and metastasize in a different tissue in the body.
20 Proteins of the present invention with cadherin activity, and polynucleotides of the present invention encoding such proteins, can be substituted in these cells for the inappropriately expressed cadherins, restoring normal cell adhesive properties and reducing or eliminating the tendency of the cells to metastasize.

Additionally, proteins of the present invention with cadherin activity, and polynucleotides
25 of the present invention encoding such proteins, can be used to generate antibodies recognizing and binding to cadherins. Such antibodies can be used to block the adhesion of inappropriately expressed tumor-cell cadherins, preventing the cells from forming a tumor elsewhere. Such an anti-cadherin antibody can also be used as a marker for the grade, pathological type, and prognosis of a cancer, i.e. the more progressed the cancer, the less cadherin expression there will be, and this
30 decrease in cadherin expression can be detected by the use of a cadherin-binding antibody.

Fragments of proteins of the present invention with cadherin activity, preferably a polypeptide comprising a decapeptide of the cadherin recognition site, and poly-nucleotides of the present invention encoding such protein fragments, can also be used to block cadherin function by binding to cadherins and preventing them from binding in ways that produce undesirable
35 effects. Additionally, fragments of proteins of the present invention with cadherin activity,

preferably truncated soluble cadherin fragments which have been found to be stable in the circulation of cancer patients, and polynucleotides encoding such protein fragments, can be used to disturb proper cell-cell adhesion.

- Assays for cadherin adhesive and invasive suppressor activity include, without limitation, those described in: Hortsch et al. J Biol Chem 270 (32): 18809-18817, 1995; Miyaki et al. Oncogene 11: 2547-2552, 1995; Ozawa et al. Cell 63: 1033-1038, 1990.

Tumor Inhibition Activity

- In addition to the activities described above for immunological treatment or prevention of tumors, a protein of the invention may exhibit other anti-tumor activities. A protein may inhibit tumor growth directly or indirectly (such as, for example, via antibody-dependent cell-mediated cytotoxicity (ADCC)). A protein may exhibit its tumor inhibitory activity by acting on tumor tissue or tumor precursor tissue, by inhibiting formation of tissues necessary to support tumor growth (such as, for example, by inhibiting angiogenesis), by causing production of other factors, agents or cell types which inhibit tumor growth, or by suppressing, eliminating or inhibiting factors, agents or cell types which promote tumor growth.

Other Activities

- A protein of the invention may also exhibit one or more of the following additional activities or effects: inhibiting the growth, infection or function of, or killing, infectious agents, including, without limitation, bacteria, viruses, fungi and other parasites; effecting (suppressing or enhancing) bodily characteristics, including, without limitation, height, weight, hair color, eye color, skin, fat to lean ratio or other tissue pigmentation, or organ or body part size or shape (such as, for example, breast augmentation or diminution, change in bone form or shape); effecting biorhythms or circadian cycles or rhythms; effecting the fertility of male or female subjects; effecting the metabolism, catabolism, anabolism, processing, utilization, storage or elimination of dietary fat, lipid, protein, carbohydrate, vitamins, minerals, cofactors or other nutritional factors or component(s); effecting behavioral characteristics, including, without limitation, appetite, libido, stress, cognition (including cognitive disorders), depression (including depressive disorders) and violent behaviors; providing analgesic effects or other pain reducing effects; promoting differentiation and growth of embryonic stem cells in lineages other than hematopoietic lineages; hormonal or endocrine activity; in the case of enzymes, correcting deficiencies of the enzyme and treating deficiency-related diseases; treatment of hyperproliferative disorders (such as, for example, psoriasis); immunoglobulin-like activity (such as, for example, the ability to bind antigens or complement); and the ability to act as an antigen in a vaccine composition to raise an

immune response against such protein or another material or entity which is cross-reactive with such protein.

ADMINISTRATION AND DOSING

5 A protein of the present invention (from whatever source derived, including without limitation from recombinant and non-recombinant sources) may be used in a pharmaceutical composition when combined with a pharmaceutically acceptable carrier. Such a composition may also contain (in addition to protein and a carrier) diluents, fillers, salts, buffers, stabilizers, solubilizers, and other materials well known in the art. The term "pharmaceutically acceptable"

10 means a non-toxic material that does not interfere with the effectiveness of the biological activity of the active ingredient(s). The characteristics of the carrier will depend on the route of administration. The pharmaceutical composition of the invention may also contain cytokines, lymphokines, or other hematopoietic factors such as M-CSF, GM-CSF, TNF, IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IFN, TNF0, TNF1, TNF2,

15 G-CSF, Meg-CSF, thrombopoietin, stem cell factor, and erythropoietin. The pharmaceutical composition may further contain other agents which either enhance the activity of the protein or compliment its activity or use in treatment. Such additional factors and/or agents may be included in the pharmaceutical composition to produce a synergistic effect with protein of the invention, or to minimize side effects. Conversely, protein of the present invention may be included in

20 formulations of the particular cytokine, lymphokine, other hematopoietic factor, thrombolytic or anti-thrombotic factor, or anti-inflammatory agent to minimize side effects of the cytokine, lymphokine, other hematopoietic factor, thrombolytic or anti-thrombotic factor, or anti-inflammatory agent.

 A protein of the present invention may be active in multimers (e.g., heterodimers or

25 homodimers) or complexes with itself or other proteins. As a result, pharmaceutical compositions of the invention may comprise a protein of the invention in such multimeric or complexed form.

 The pharmaceutical composition of the invention may be in the form of a complex of the protein(s) of present invention along with protein or peptide antigens. The protein and/or peptide antigen will deliver a stimulatory signal to both B and T lymphocytes. B lymphocytes will

30 respond to antigen through their surface immunoglobulin receptor. T lymphocytes will respond to antigen through the T cell receptor (TCR) following presentation of the antigen by MHC proteins. MHC and structurally related proteins including those encoded by class I and class II MHC genes on host cells will serve to present the peptide antigen(s) to T lymphocytes. The antigen components could also be supplied as purified MHC-peptide complexes alone or with

35 co-stimulatory molecules that can directly signal T cells. Alternatively antibodies able to bind

surface immunoglobulin and other molecules on B cells as well as antibodies able to bind the TCR and other molecules on T cells can be combined with the pharmaceutical composition of the invention.

The pharmaceutical composition of the invention may be in the form of a liposome in which protein of the present invention is combined, in addition to other pharmaceutically acceptable carriers, with amphipathic agents such as lipids which exist in aggregated form as micelles, insoluble monolayers, liquid crystals, or lamellar layers in aqueous solution. Suitable lipids for liposomal formulation include, without limitation, monoglycerides, diglycerides, sulfatides, lysolecithin, phospholipids, saponin, bile acids, and the like. Preparation of such liposomal formulations is within the level of skill in the art, as disclosed, for example, in U.S. Patent No. 4,235,871; U.S. Patent No. 4,501,728; U.S. Patent No. 4,837,028; and U.S. Patent No. 4,737,323, all of which are incorporated herein by reference.

As used herein, the term "therapeutically effective amount" means the total amount of each active component of the pharmaceutical composition or method that is sufficient to show a meaningful patient benefit, i.e., treatment, healing, prevention or amelioration of the relevant medical condition, or an increase in rate of treatment, healing, prevention or amelioration of such conditions. When applied to an individual active ingredient, administered alone, the term refers to that ingredient alone. When applied to a combination, the term refers to combined amounts of the active ingredients that result in the therapeutic effect, whether administered in combination, serially or simultaneously.

In practicing the method of treatment or use of the present invention, a therapeutically effective amount of protein of the present invention is administered to a mammal having a condition to be treated. Protein of the present invention may be administered in accordance with the method of the invention either alone or in combination with other therapies such as treatments employing cytokines, lymphokines or other hematopoietic factors. When co-administered with one or more cytokines, lymphokines or other hematopoietic factors, protein of the present invention may be administered either simultaneously with the cytokine(s), lymphokine(s), other hematopoietic factor(s), thrombolytic or anti-thrombotic factors, or sequentially. If administered sequentially, the attending physician will decide on the appropriate sequence of administering protein of the present invention in combination with cytokine(s), lymphokine(s), other hematopoietic factor(s), thrombolytic or anti-thrombotic factors.

Administration of protein of the present invention used in the pharmaceutical composition or to practice the method of the present invention can be carried out in a variety of conventional ways, such as oral ingestion, inhalation, topical application or cutaneous, subcutaneous,

intraperitoneal, parenteral or intravenous injection. Intravenous administration to the patient is preferred.

When a therapeutically effective amount of protein of the present invention is administered orally, protein of the present invention will be in the form of a tablet, capsule, powder, solution or elixir. When administered in tablet form, the pharmaceutical composition of the invention may additionally contain a solid carrier such as a gelatin or an adjuvant. The tablet, capsule, and powder contain from about 5 to 95% protein of the present invention, and preferably from about 25 to 90% protein of the present invention. When administered in liquid form, a liquid carrier such as water, petroleum, oils of animal or plant origin such as peanut oil, mineral oil, soybean oil, or sesame oil, or synthetic oils may be added. The liquid form of the pharmaceutical composition may further contain physiological saline solution, dextrose or other saccharide solution, or glycols such as ethylene glycol, propylene glycol or polyethylene glycol. When administered in liquid form, the pharmaceutical composition contains from about 0.5 to 90% by weight of protein of the present invention, and preferably from about 1 to 50% protein of the present invention.

When a therapeutically effective amount of protein of the present invention is administered by intravenous, cutaneous or subcutaneous injection, protein of the present invention will be in the form of a pyrogen-free, parenterally acceptable aqueous solution. The preparation of such parenterally acceptable protein solutions, having due regard to pH, isotonicity, stability, and the like, is within the skill in the art. A preferred pharmaceutical composition for intravenous, cutaneous, or subcutaneous injection should contain, in addition to protein of the present invention, an isotonic vehicle such as Sodium Chloride Injection, Ringer's Injection, Dextrose Injection, Dextrose and Sodium Chloride Injection, Lactated Ringer's Injection, or other vehicle as known in the art. The pharmaceutical composition of the present invention may also contain stabilizers, preservatives, buffers, antioxidants, or other additives known to those of skill in the art.

The amount of protein of the present invention in the pharmaceutical composition of the present invention will depend upon the nature and severity of the condition being treated, and on the nature of prior treatments which the patient has undergone. Ultimately, the attending physician will decide the amount of protein of the present invention with which to treat each individual patient. Initially, the attending physician will administer low doses of protein of the present invention and observe the patient's response. Larger doses of protein of the present invention may be administered until the optimal therapeutic effect is obtained for the patient, and at that point the dosage is not increased further. It is contemplated that the various pharmaceutical compositions used to practice the method of the present invention should contain about 0.01 μ g

to about 100 mg (preferably about 0.1 mg to about 10 mg, more preferably about 0.1 μ g to about 1 mg) of protein of the present invention per kg body weight.

The duration of intravenous therapy using the pharmaceutical composition of the present invention will vary, depending on the severity of the disease being treated and the condition and potential idiosyncratic response of each individual patient. It is contemplated that the duration of each application of the protein of the present invention will be in the range of 12 to 24 hours of continuous intravenous administration. Ultimately the attending physician will decide on the appropriate duration of intravenous therapy using the pharmaceutical composition of the present invention.

10 Protein of the invention may also be used to immunize animals to obtain polyclonal and monoclonal antibodies which specifically react with the protein. As used herein, the term "antibody" includes without limitation a polyclonal antibody, a monoclonal antibody, a chimeric antibody, a single-chain antibody, a CDR-grafted antibody, a humanized antibody, or fragments thereof which bind to the indicated protein. Such term also
15 includes any other species derived from an antibody or antibody sequence which is capable of binding the indicated protein.

Antibodies to a particular protein can be produced by methods well known to those skilled in the art. For example, monoclonal antibodies can be produced by generation of antibody-producing hybridomas in accordance with known methods
20 (see for example, Goding, 1983, Monoclonal antibodies: principles and practice, Academic Press Inc., New York; and Yokoyama, 1992, "Production of Monoclonal Antibodies" in Current Protocols in Immunology, Unit 2.5, Greene Publishing Assoc. and John Wiley & Sons). Polyclonal sera and antibodies can be produced by inoculation of a mammalian subject with the relevant protein or fragments thereof in
25 accordance with known methods. Fragments of antibodies, receptors, or other reactive peptides can be produced from the corresponding antibodies by cleavage of and collection of the desired fragments in accordance with known methods (see for example, Goding, supra; and Andrew et al., 1992, "Fragmentation of Immunoglobulins" in Current Protocols in Immunology, Unit 2.8, Greene Publishing
30 Assoc. and John Wiley & Sons). Chimeric antibodies and single chain antibodies can also be produced in accordance with known recombinant methods (see for example, 5,169,939, 5,194,594, and 5,576,184). Humanized antibodies can also be made from corresponding murine antibodies in accordance with well known methods (see for

example, U.S. Patent Nos. 5,530,101, 5,585,089, and 5,693,762). Additionally, human antibodies may be produced in non-human animals such as mice that have been genetically altered to express human antibody molecules (see for example Fishwild *et al.*, 1996, *Nature Biotechnology* **14**: 845-851; Mendez *et al.*, 1997, *Nature Genetics* **15**: 146-156 (erratum *Nature Genetics* **16**: 410); and U.S. Patents 5,877,397 and 5,625,126). Such antibodies may be obtained using either the entire protein or fragments thereof as an immunogen. The peptide immunogens additionally may contain a cysteine residue at the carboxyl terminus, and are conjugated to a hapten such as keyhole limpet hemocyanin (KLH). Methods for synthesizing such peptides are known in the art, for example, as in R.P. Merrifield, J. Amer.Chem.Soc. **85**, 2149-2154 (1963); J.L. Krstenansky, *et al.*, *FEBS Lett.* **211**, 10 (1987).

Monoclonal antibodies binding to the protein of the invention may be useful diagnostic agents for the immunodetection of the protein. Neutralizing monoclonal antibodies binding to the protein may also be useful therapeutics for both conditions associated with the protein and also in the treatment of some forms of cancer where abnormal expression of the protein is involved. In the case of cancerous cells or leukemic cells, neutralizing monoclonal antibodies against the protein may be useful in detecting and preventing the metastatic spread of the cancerous cells, which may be mediated by the protein.

For compositions of the present invention which are useful for bone, cartilage, tendon or ligament regeneration, the therapeutic method includes administering the composition topically, systematically, or locally as an implant or device. When administered, the therapeutic composition for use in this invention is, of course, in a pyrogen-free, physiologically acceptable form. Further, the composition may desirably be encapsulated or injected in a viscous form for delivery to the site of bone, cartilage or tissue damage. Topical administration may be suitable for wound healing and tissue repair. Therapeutically useful agents other than a protein of the invention which may also optionally be included in the composition as described above, may alternatively or additionally, be administered simultaneously or sequentially with the composition in the methods of the invention. Preferably for bone and/or cartilage formation, the composition would include a matrix capable of delivering the protein-containing composition to the site of bone and/or cartilage damage, providing a structure for the developing bone and cartilage and optimally capable of being resorbed into the body. Such matrices may be formed of materials presently in use for other implanted medical applications.

The choice of matrix material is based on biocompatibility, biodegradability, mechanical properties, cosmetic appearance and interface properties. The particular application of the compositions will define the appropriate formulation. Potential matrices for the compositions may be biodegradable and chemically defined calcium sulfate, tricalciumphosphate, hydroxyapatite,

polylactic acid, polyglycolic acid and polyanhydrides. Other potential materials are biodegradable and biologically well-defined, such as bone or dermal collagen. Further matrices are comprised of pure proteins or extracellular matrix components. Other potential matrices are nonbiodegradable and chemically defined, such as sintered hydroxapatite, bioglass, aluminates, 5 or other ceramics. Matrices may be comprised of combinations of any of the above mentioned types of material, such as polylactic acid and hydroxyapatite or collagen and tricalciumphosphate. The bioceramics may be altered in composition, such as in calcium-aluminate-phosphate and processing to alter pore size, particle size, particle shape, and biodegradability.

Presently preferred is a 50:50 (mole weight) copolymer of lactic acid and glycolic acid 10 in the form of porous particles having diameters ranging from 150 to 800 microns. In some applications, it will be useful to utilize a sequestering agent, such as carboxymethyl cellulose or autologous blood clot, to prevent the protein compositions from disassociating from the matrix.

A preferred family of sequestering agents is cellulosic materials such as alkylcelluloses (including hydroxyalkylcelluloses), including methylcellulose, ethylcellulose, 15 hydroxyethylcellulose, hydroxypropylcellulose, hydroxypropyl-methylcellulose, and carboxymethylcellulose, the most preferred being cationic salts of carboxymethylcellulose (CMC). Other preferred sequestering agents include hyaluronic acid, sodium alginate, poly(ethylene glycol), polyoxyethylene oxide, carboxyvinyl polymer and poly(vinyl alcohol). The amount of sequestering agent useful herein is 0.5-20 wt%, preferably 1-10 wt% based on total 20 formulation weight, which represents the amount necessary to prevent desorption of the protein from the polymer matrix and to provide appropriate handling of the composition, yet not so much that the progenitor cells are prevented from infiltrating the matrix, thereby providing the protein the opportunity to assist the osteogenic activity of the progenitor cells.

In further compositions, proteins of the invention may be combined with other agents 25 beneficial to the treatment of the bone and/or cartilage defect, wound, or tissue in question. These agents include various growth factors such as epidermal growth factor (EGF), platelet derived growth factor (PDGF), transforming growth factors (TGF- α and TGF- β), and insulin-like growth factor (IGF).

The therapeutic compositions are also presently valuable for veterinary applications. 30 Particularly domestic animals and thoroughbred horses, in addition to humans, are desired patients for such treatment with proteins of the present invention.

The dosage regimen of a protein-containing pharmaceutical composition to be used in tissue regeneration will be determined by the attending physician considering various factors which modify the action of the proteins, e.g., amount of tissue weight desired to be formed, the 35 site of damage, the condition of the damaged tissue, the size of a wound, type of damaged tissue

(e.g., bone), the patient's age, sex, and diet, the severity of any infection, time of administration and other clinical factors. The dosage may vary with the type of matrix used in the reconstitution and with inclusion of other proteins in the pharmaceutical composition. For example, the addition of other known growth factors, such as IGF I (insulin like growth factor I), to the final composition, may also effect the dosage. Progress can be monitored by periodic assessment of tissue/bone growth and/or repair, for example, X-rays, histomorphometric determinations and tetracycline labeling.

Polynucleotides of the present invention can also be used for gene therapy. Such polynucleotides can be introduced either *in vivo* or *ex vivo* into cells for expression in a mammalian subject. Polynucleotides of the invention may also be administered by other known methods for introduction of nucleic acid into a cell or organism (including, without limitation, in the form of viral vectors or naked DNA).

Cells may also be cultured *ex vivo* in the presence of proteins of the present invention in order to proliferate or to produce a desired effect on or activity in such cells. Treated cells can then be introduced *in vivo* for therapeutic purposes.

Patent and literature references cited herein are incorporated by reference as if fully set forth.

What is claimed is:

1. An isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence of SEQ ID NO:41;
- (b) the nucleotide sequence of SEQ ID NO:41 from nucleotide 102 to nucleotide 2027;
- (c) the nucleotide sequence of SEQ ID NO:41 from nucleotide 1902 to nucleotide 2027;
- (d) the nucleotide sequence of SEQ ID NO:41 from nucleotide 1 to nucleotide 431;
- (e) the nucleotide sequence of the full-length protein coding sequence of clone BG160_1 deposited with the ATCC under accession number 98232;
- (f) a nucleotide sequence encoding the full-length protein encoded by the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232;
- (g) the nucleotide sequence of a mature protein coding sequence of clone BG160_1 deposited with the ATCC under accession number 98232;
- (h) a nucleotide sequence encoding a mature protein encoded by the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232;
- (i) a nucleotide sequence encoding a protein comprising the amino acid sequence of SEQ ID NO:42;
- (j) a nucleotide sequence encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:42, the fragment comprising eight contiguous amino acids of SEQ ID NO:42;
- (k) the nucleotide sequence of a polynucleotide that hybridizes under conditions at least as stringent as 4X SSC at 65 degrees C, or 4X SSC at 42 degrees C with 50% formamide, to any one of the polynucleotides specified by (a)-(h); and
- (l) the nucleotide sequence of a polynucleotide that hybridizes under conditions at least as stringent as 4X SSC at 50 degrees C, or 6X SSC at 40 degrees C with 50% formamide, to any one of the polynucleotides specified by (a)-(h), and that has a length that is at least 25% of the length of SEQ ID NO:41.

2. The polynucleotide of claim 1 wherein said polynucleotide is operably linked to at least one expression control sequence.

3. A host cell transformed with the polynucleotide of claim 2.

4. The host cell of claim 3, wherein said cell is a mammalian cell.
5. A process for producing a protein encoded by the polynucleotide of claim 2, which process comprises:
 - (a) growing a culture of a host cell in a suitable culture medium, wherein the host cell has been transformed with the polynucleotide of claim 2; and
 - (b) purifying said protein from the culture.
6. A protein produced according to the process of claim 5.
7. An isolated polynucleotide encoding the protein of claim 6.
8. The polynucleotide of claim 7, wherein the polynucleotide comprises the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232.
9. A protein comprising an amino acid sequence selected from the group consisting of:
 - (a) the amino acid sequence of SEQ ID NO:42;
 - (b) the amino acid sequence of SEQ ID NO:42 from amino acid 1 to amino acid 110;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:42, the fragment comprising eight contiguous amino acids of SEQ ID NO:42; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232;the protein being substantially free from other mammalian proteins.
10. The protein of claim 9, wherein said protein comprises the amino acid sequence of SEQ ID NO:42.
11. A composition comprising the protein of claim 9 and a pharmaceutically acceptable carrier.
12. An isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:
 - (a) the nucleotide sequence of SEQ ID NO:129;

- (b) the nucleotide sequence of SEQ ID NO:129 from nucleotide 383 to nucleotide 3958;
- (c) the nucleotide sequence of SEQ ID NO:129 from nucleotide 470 to nucleotide 3958;
- (d) the nucleotide sequence of SEQ ID NO:129 from nucleotide 271 to nucleotide 488;
- (e) the nucleotide sequence of the full-length protein coding sequence of clone CO722_1 deposited with the ATCC under accession number 98271;
- (f) a nucleotide sequence encoding the full-length protein encoded by the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271;
- (g) the nucleotide sequence of a mature protein coding sequence of clone CO722_1 deposited with the ATCC under accession number 98271;
- (h) a nucleotide sequence encoding a mature protein encoded by the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271;
- (i) a nucleotide sequence encoding a protein comprising the amino acid sequence of SEQ ID NO:130;
- (j) a nucleotide sequence encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:130, the fragment comprising eight contiguous amino acids of SEQ ID NO:130;
- (k) the nucleotide sequence of a polynucleotide that hybridizes under conditions at least as stringent as 4X SSC at 65 degrees C, or 4X SSC at 42 degrees C with 50% formamide, to any one of the polynucleotides specified by (a)-(h); and
- (l) the nucleotide sequence of a polynucleotide that hybridizes under conditions at least as stringent as 4X SSC at 50 degrees C, or 6X SSC at 40 degrees C with 50% formamide, to any one of the polynucleotides specified by (a)-(h), and that has a length that is at least 25% of the length of SEQ ID NO:129.

13. A protein comprising an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:130;
- (b) the amino acid sequence of SEQ ID NO:130 from amino acid 1 to amino acid 34;
- (c) a fragment of the amino acid sequence of SEQ ID NO:130, the fragment comprising eight contiguous amino acids of SEQ ID NO:130; and

(d) the amino acid sequence encoded by the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271;
the protein being substantially free from other mammalian proteins.

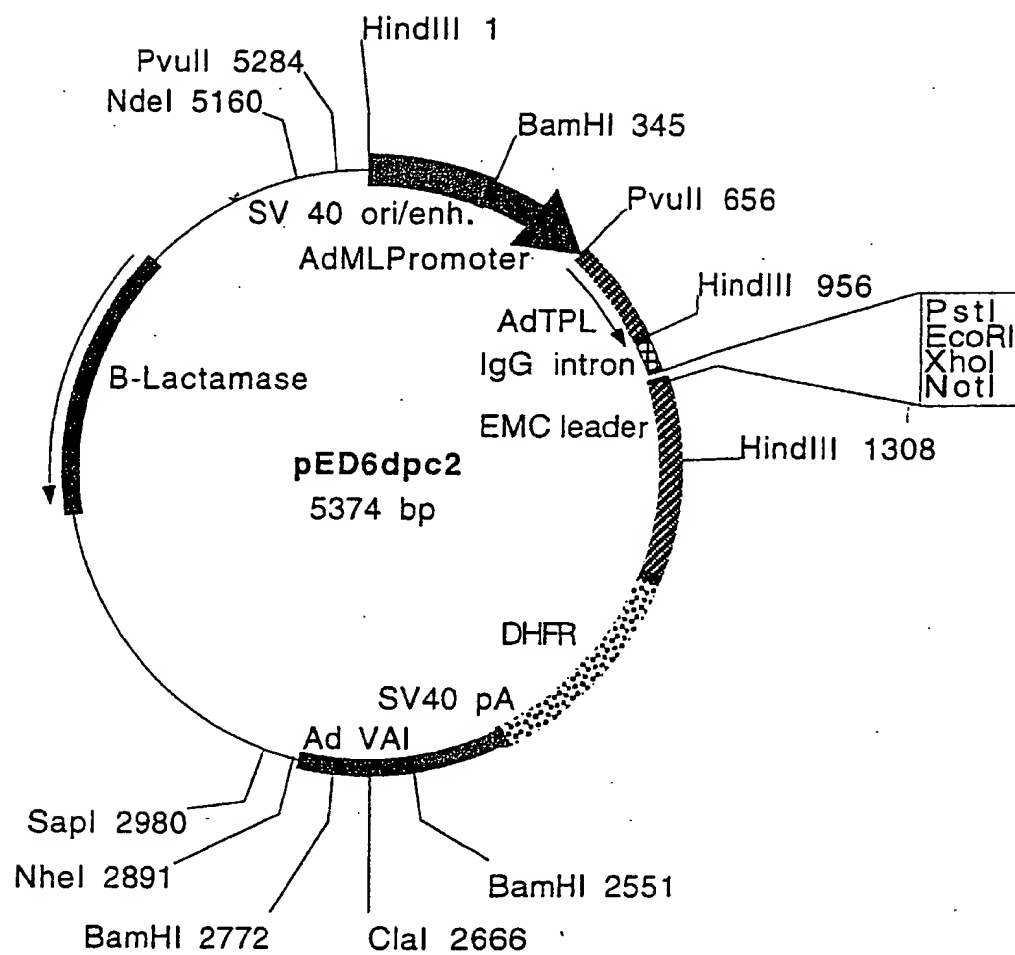


Fig. 1A

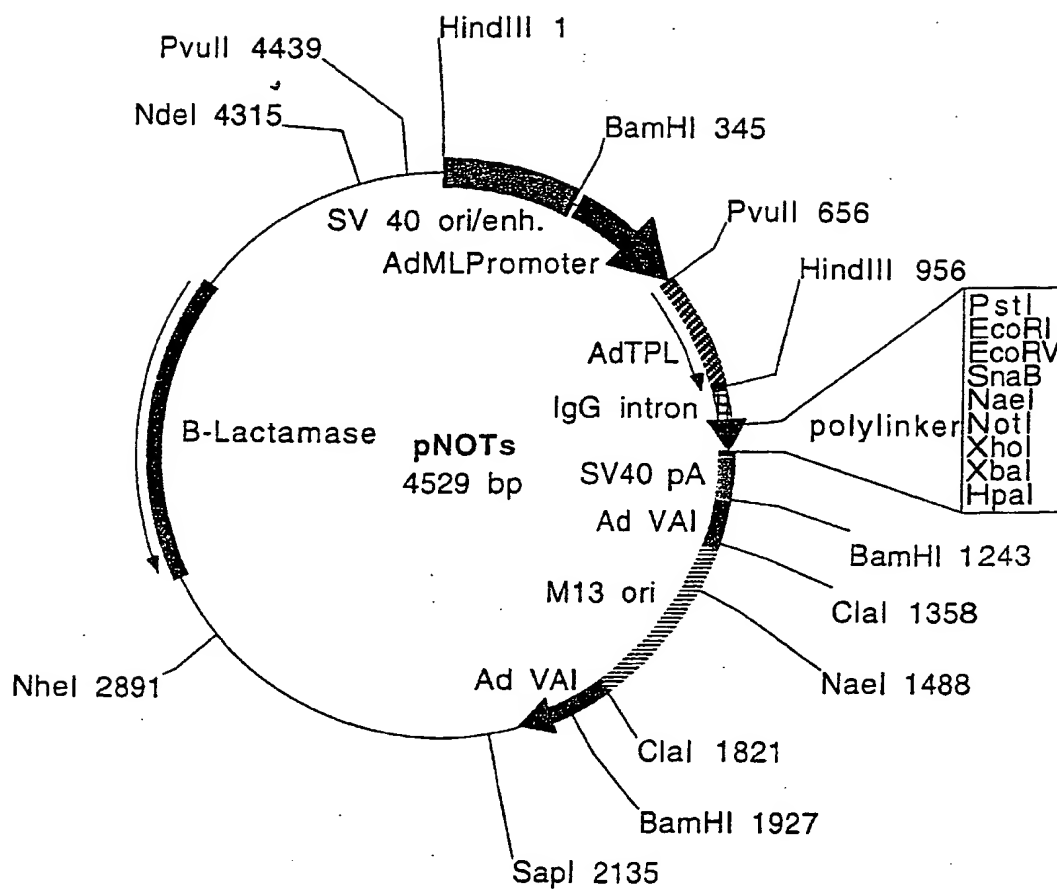


Fig. 1B

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<213> Homo sapiens

<400> 3

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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa

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92

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 <213> Homo sapiens

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 gcaaagccat tgggtattcc tccgttccca gtgaatgtcc tggaaacctg gaccatcaga 300
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 aaaaaaaaaa 2949

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 <212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (255)

<400> 5

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Leu Asp His Gln Arg Gln Ala Ser Arg Thr Pro Cys Pro Arg Pro Pro
      35              40              45

Leu Ala Gly Thr Gln Gly Leu Val Thr Asp Thr Arg Ala Ala Pro Leu
      50              55              60

Thr Pro Ile Gly Thr Pro Leu Pro Ser Ala Ile Pro Ser Gly Tyr Cys
      65              70              75              80

Ser Gln Asp Gly Gln Thr Gly Arg Gln Pro Leu Pro Pro Tyr Thr Pro
      85              90              95

Ala Met Met His Arg Ser Asn Gly His Thr Leu Thr Gln Pro Pro Gly
      100              105              110

Pro Arg Gly Cys Glu Gly Asp Gly Pro Glu His Gly Val Glu Glu Gly
      115              120              125

Thr Arg Lys Arg Val Ser Leu Pro Gln Trp Pro Pro Pro Ser Arg Ala
      130              135              140

Lys Trp Ala His Ala Ala Arg Glu Asp Ser Leu Pro Glu Glu Ser Ser
      145              150              155              160

Ala Pro Asp Phe Ala Asn Leu Lys His Tyr Gln Lys Gln Gln Ser Leu
      165              170              175

Pro Ser Leu Cys Ser Thr Ser Asp Pro Asp Thr Pro Leu Gly Ala Pro
      180              185              190

Ser Thr Pro Gly Arg Ile Ser Leu Arg Ile Ser Glu Ser Val Leu Arg
      195              200              205

Asp Ser Pro Pro Pro His Glu Asp Tyr Glu Asp Glu Val Phe Val Arg
      210              215              220

Asp Pro His Pro Lys Ala Thr Ser Ser Pro Thr Phe Glu Pro Leu Pro
      225              230              235              240

Pro Pro Pro Pro Pro Pro Pro Ser Gln Glu Thr Pro Val Tyr Xaa Met
      245              250              255

Asp Asp Phe Pro Pro Pro Pro Pro His Thr Val Cys Glu Ala Gln Leu
      260              265              270

Asp Ser Glu Asp Pro Glu Gly Pro Arg Pro Ser Phe Asn Lys Leu Ser
      275              280              285

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Lys Val Thr Ile Ala Arg Glu Arg His Met Pro Gly Ala Ala His Val
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 Val Gly Ser Gln Thr Leu Ala Ser Arg Leu Gln Thr Ser Ile Lys Gly
 305 310 315 320
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 325 330 335
 Leu Ala Gly Ser Leu Gly Gly Gln Pro Ala Pro Ile Gln Thr Gln Ser
 340 345 350
 Leu Ser His Asp Pro Val Ser Gly Thr Gln Gly Leu Glu Lys Lys Val
 355 360 365
 Ser Pro Asp Pro Gln Lys Ser Ser Glu Asp Ile Arg Thr Glu Ala Leu
 370 375 380
 Ala Lys Glu Ile Val His Gln Asp Lys Ser Leu Ala Asp Ile Leu Asp
 385 390 395 400
 Pro Asp Ser Arg Leu Lys Thr Thr Met Asp Leu Met Glu Gly Leu Phe
 405 410 415
 Pro Arg Asp Val Asn Leu Leu Lys Glu Asn Ser Val Lys Arg Lys Ala
 420 425 430
 Ile Gln Arg Thr Val Ser Ser Ser Gly Cys Glu Gly Lys Arg Asn Glu
 435 440 445
 Asp Lys Glu Ala Val Ser Met Leu Val Asn Cys Pro Ala Tyr Tyr Ser
 450 455 460
 Val Ser Ala Pro Lys Ala Glu Leu Leu Asn Lys Ile Lys Glu Met Pro
 465 470 475 480
 Ala Glu Val Asn Glu Glu Glu Glu Gln Ala Asp Val Asn Glu Lys Lys
 485 490 495
 Ala Glu Leu Ile Gly Ser Leu Thr His Lys Leu Glu Thr Leu Gln Glu
 500 505 510
 Ala Lys Gly Ser Leu Leu Thr Asp Ile Lys Leu Asn Asn Ala Leu Gly
 515 520 525
 Glu Glu Val Glu Ala Leu Ile Ser Glu Leu Cys Lys Pro Asn Glu Phe
 530 535 540
 Asp Lys Tyr Arg Met Phe Ile Gly Asp Leu Asp Lys Val Val Asn Leu
 545 550 555 560
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 565 570 575
 Gly Leu Gly Glu Asp Ala Ser Asn Glu Glu Arg Ser Ser Leu Tyr Glu
 580 585 590
 Lys Arg Lys Ile Leu Ala Gly Gln His Glu Asp Ala Arg Glu Leu Lys
 595 600 605

Glu Asn Leu Asp Arg Arg Glu Arg Val Val Leu Gly Ile Leu Ala Asn
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 Tyr Leu Ser Glu Glu Gln Leu Gln Asp Tyr Gln His Phe Val Lys Met
 625 630 635 640
 Lys Ser Thr Leu Leu Ile Glu Gln Arg Lys Leu Asp Asp Lys Ile Lys
 645 650 655
 Leu Gly Gln Glu Gln Val Lys Cys Leu Leu Glu Ser Leu Pro Ser Asp
 660 665 670
 Phe Ile Pro Lys Ala Gly Ala Leu Ala Leu Pro Pro Asn Leu Thr Ser
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 Leu Thr Ser Pro Leu
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 <213> Homo sapiens

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 <221> unsure
 <222> (4)

<220>
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 <222> (30)

<220>
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 <222> (97)

<220>
 <221> unsure
 <222> (154)

<220>
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 <222> (174)

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 actcagagtg gaaatcttgt ccacagctac cgangcactg gcggcatctt ccangtgtgc 180
 tggaacgccc 190

<210> 7
 <211> 391
 <212> DNA
 <213> Homo sapiens

<400> 7

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 cccaatgaac aaagaagatt ttagaaaata gaaagctgtt gggattacaa agttgcgcgt 180
 ttcacggtgta caaactgggtc tttgaacctc ctttgtgaga gcaattgtag tgtccaaatt 240
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<210> 8
 <211> 62
 <212> PRT
 <213> Homo sapiens

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 Lys Lys Lys Asn Pro Lys Glu Glu Gly Phe Ser Pro Phe Pro Val Trp
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 Phe Ile Thr Ala Phe Cys Phe Phe Phe Gly Thr Ala Phe Tyr Val Ser
 35 40 45
 Phe His Ser Ala Ile Thr Glu Pro Val Pro Gly Gly Asn Gln
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 <211> 267
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (21)

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<210> 10
 <211> 2178
 <212> DNA
 <213> Homo sapiens

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2178

<210> 11

<211> 487

<212> PRT

<213> Homo sapiens

<400> 11

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```

Leu Val Gln Leu Ala Ala Arg Leu Arg Pro Ala Leu Cys Asp Thr Leu
      20                      25                      30

```

```

Ile Thr Val Gly Ser Gln Glu Phe Pro Ala His Ser Leu Val Leu Ala
    35                      40                      45

```

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Gly Val Ser Gln Gln Leu Gly Arg Arg Gly Gln Trp Ala Leu Gly Glu
    50                      55                      60

```

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Gly Ile Ser Pro Ser Thr Phe Ala Gln Leu Leu Asn Phe Val Tyr Gly
    65                      70                      75                      80

```

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Glu Ser Val Glu Leu Gln Pro Gly Glu Leu Arg Pro Leu Gln Glu Ala
      85                      90                      95

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Ala Arg Ala Leu Gly Val Gln Ser Leu Glu Glu Ala Cys Trp Arg Ala
    100                      105                      110

```

```

Arg Gly Asp Arg Ala Lys Lys Pro Asp Pro Gly Leu Lys Lys His Gln
    115                      120                      125

```

```

Glu Glu Pro Glu Lys Pro Ser Arg Asn Pro Glu Arg Glu Leu Gly Asp
    130                      135                      140

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Pro Gly Glu Lys Gln Lys Pro Glu Gln Val Ser Arg Thr Gly Gly Arg
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 Glu Gln Glu Met Leu His Lys His Ser Pro Pro Arg Gly Arg Pro Glu
 165 170 175
 Met Ala Gly Ala Thr Gln Glu Ala Gln Gln Glu Gln Thr Arg Ser Lys
 180 185 190
 Glu Lys Arg Leu Gln Ala Pro Val Gly Gln Arg Gly Ala Asp Gly Lys
 195 200 205
 His Gly Val Leu Thr Trp Leu Arg Glu Asn Pro Gly Gly Ser Glu Glu
 210 215 220
 Ser Leu Arg Lys Leu Pro Gly Pro Leu Pro Pro Ala Gly Ser Leu Gln
 225 230 235 240
 Thr Ser Val Thr Pro Arg Pro Ser Trp Ala Glu Ala Pro Trp Leu Val
 245 250 255
 Gly Gly Gln Pro Ala Leu Trp Ser Ile Leu Leu Met Pro Pro Arg Tyr
 260 265 270
 Gly Ile Pro Phe Tyr His Ser Thr Pro Thr Thr Gly Ala Trp Gln Glu
 275 280 285
 Val Trp Arg Glu Gln Arg Ile Pro Leu Ser Leu Asn Ala Pro Lys Gly
 290 295 300
 Leu Trp Ser Gln Asn Gln Leu Ala Ser Ser Ser Pro Thr Pro Gly Ser
 305 310 315 320
 Leu Pro Gln Gly Pro Ala Gln Leu Ser Pro Gly Glu Met Glu Glu Ser
 325 330 335
 Asp Gln Gly His Thr Gly Ala Leu Ala Thr Cys Ala Gly His Glu Asp
 340 345 350
 Lys Ala Gly Cys Pro Pro Arg Pro His Pro Pro Pro Ala Pro Pro Ala
 355 360 365
 Arg Ser Arg Pro Tyr Ala Cys Ser Val Cys Gly Lys Arg Phe Ser Leu
 370 375 380
 Lys His Gln Met Glu Thr His Tyr Arg Val His Thr Gly Glu Lys Pro
 385 390 395 400
 Phe Ser Cys Ser Leu Cys Pro Gln Arg Ser Arg Asp Phe Ser Ala Met
 405 410 415
 Thr Lys His Leu Arg Thr His Gly Ala Ala Pro Tyr Arg Cys Ser Leu
 420 425 430
 Cys Gly Ala Gly Cys Pro Ser Leu Ala Ser Met Gln Ala His Met Arg
 435 440 445
 Gly His Ser Pro Ser Gln Leu Pro Pro Gly Trp Thr Ile Arg Ser Thr
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Phe Leu Tyr Ser Ser Ser Arg Pro Ser Arg Pro Ser Thr Ser Pro Cys
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Cys Pro Ser Ser Ser Thr Thr
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<210> 12
 <211> 2436
 <212> DNA
 <213> Homo sapiens

<400> 12
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 <211> 763
 <212> PRT
 <213> Homo sapiens

<400> 13
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 Cys Lys Leu His Ala Leu Phe Thr Leu Ala Gln Ala Glu Asp Ser Val
 35 40 45
 Phe Val Ile Val Asn Lys Glu Lys Pro Asp Ile Phe Gln Leu Val Ser
 50 55 60
 Val Lys Leu Pro Lys Ser Ser Ser Gln Glu Val Glu Ala Lys Glu Leu
 65 70 75 80
 Ser Phe Val Leu Asp Tyr Ile Asn Gln Ser Pro Lys Cys Ile Ala Phe
 85 90 95
 Gly Asn Glu Gly Val Tyr Val Ala Ala Val Arg Glu Phe Tyr Leu Ser
 100 105 110
 Val Tyr Phe Phe Lys Lys Lys Thr Thr Ser Arg Phe Thr Leu Ser Ser
 115 120 125
 Ser Arg Asn Lys Lys His Ala Lys Asn Asn Phe Thr Cys Val Ala Cys
 130 135 140
 His Pro Thr Glu Asp Cys Ile Ala Ser Gly His Met Asp Gly Lys Ile
 145 150 155 160
 Arg Leu Trp Arg Asn Phe Tyr Asp Asp Lys Lys Tyr Thr Tyr Thr Cys
 165 170 175
 Leu His Trp His His Asp Met Val Met Asp Leu Ala Phe Ser Val Thr
 180 185 190
 Gly Thr Ser Leu Leu Ser Gly Gly Arg Glu Ser Val Leu Val Glu Trp
 195 200 205
 Arg Asp Ala Thr Glu Lys Asn Lys Glu Phe Leu Pro Arg Leu Gly Ala
 210 215 220
 Thr Ile Glu His Ile Ser Val Ser Pro Ala Gly Asp Leu Phe Cys Thr
 225 230 235 240
 Ser His Ser Asp Asn Lys Ile Ile Ile Ile His Arg Asn Leu Glu Ala
 245 250 255
 Ser Ala Val Ile Gln Gly Leu Val Lys Asp Arg Ser Ile Phe Thr Gly
 260 265 270
 Leu Met Ile Asp Pro Arg Thr Lys Ala Leu Val Leu Asn Gly Lys Pro
 275 280 285
 Gly His Leu Gln Phe Tyr Ser Leu Gln Ser Asp Lys Gln Leu Tyr Asn
 290 295 300
 Leu Asp Ile Ile Gln Gln Glu Tyr Ile Asn Asp Tyr Gly Leu Ile Gln
 305 310 315 320

Ile Glu Leu Thr Lys Ala Ala Phe Gly Cys Phe Gly Asn Trp Leu Ala
 325 330 335
 Thr Val Glu Gln Arg Gln Glu Lys Glu Thr Glu Leu Glu Leu Gln Met
 340 345 350
 Lys Leu Trp Met Tyr Asn Lys Lys Thr Gln Gly Phe Ile Leu Asn Thr
 355 360 365
 Lys Ile Asn Met Pro His Glu Asp Cys Ile Thr Ala Leu Cys Phe Cys
 370 375 380
 Asn Ala Glu Lys Ser Glu Gln Pro Thr Leu Val Thr Ala Ser Lys Asp
 385 390 395 400
 Gly Tyr Phe Lys Val Trp Ile Leu Thr Asp Asp Ser Asp Ile Tyr Lys
 405 410 415
 Lys Ala Val Gly Trp Thr Cys Asp Phe Val Gly Ser Tyr His Lys Tyr
 420 425 430
 Gln Ala Thr Asn Cys Cys Phe Ser Glu Asp Gly Ser Leu Leu Ala Val
 435 440 445
 Ser Phe Glu Glu Ile Val Thr Ile Trp Asp Ser Val Thr Trp Glu Leu
 450 455 460
 Lys Cys Thr Phe Cys Gln Arg Ala Gly Lys Ile Arg His Leu Cys Phe
 465 470 475 480
 Gly Arg Leu Thr Cys Ser Lys Tyr Leu Leu Gly Ala Thr Glu Asn Gly
 485 490 495
 Ile Leu Cys Cys Trp Asn Leu Leu Ser Cys Ala Leu Glu Trp Asn Ala
 500 505 510
 Lys Leu Asn Val Arg Val Met Glu Pro Asp Pro Asn Ser Glu Asn Ile
 515 520 525
 Ala Ala Ile Ser Gln Ser Ser Val Gly Ser Asp Leu Phe Val Phe Lys
 530 535 540
 Pro Ser Glu Pro Arg Pro Leu Tyr Ile Gln Lys Gly Ile Ser Arg Glu
 545 550 555 560
 Lys Val Gln Trp Gly Val Phe Val Pro Arg Asp Val Pro Glu Ser Phe
 565 570 575
 Thr Ser Glu Ala Tyr Gln Trp Leu Asn Arg Ser Gln Phe Tyr Phe Leu
 580 585 590
 Thr Lys Ser Gln Ser Leu Leu Thr Phe Ser Thr Lys Ser Pro Glu Glu
 595 600 605
 Lys Leu Thr Pro Thr Ser Lys Gln Leu Leu Ala Glu Glu Ser Leu Pro
 610 615 620
 Thr Thr Pro Phe Tyr Phe Ile Leu Gly Lys His Arg Gln Gln Gln Asp
 625 630 635 640

Glu Lys Leu Asn Glu Thr Leu Glu Asn Glu Leu Val Gln Leu Pro Leu
 645 650 655
 Thr Glu Asn Ile Pro Ala Ile Ser Glu Leu Leu His Thr Pro Ala His
 660 665 670
 Val Leu Pro Ser Ala Ala Phe Leu Cys Ser Met Phe Val Asn Ser Leu
 675 680 685
 Leu Leu Ser Lys Glu Thr Lys Ser Ala Lys Glu Ile Pro Glu Asp Val
 690 695 700
 Asp Met Glu Glu Glu Lys Glu Ser Glu Asp Ser Asp Glu Glu Asn Asp
 705 710 715 720
 Phe Thr Glu Lys Val Gln Asp Thr Ser Asn Thr Gly Leu Gly Glu Asp
 725 730 735
 Ile Ile His Gln Leu Ser Lys Ser Glu Glu Lys Glu Leu Arg Lys Phe
 740 745 750
 Arg Lys Ile Asp Tyr Ser Trp Ile Ala Ala Leu
 755 760

<210> 14
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 <213> Homo sapiens

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ngcgtcatgg atggaat 137

<210> 15
<211> 539
<212> DNA
<213> Homo sapiens

<400> 15
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ccaccagccc agggaatgcc tctaccagtt gtcagcgaga ggcttacaca gcattctaaa 180
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cctttgctaa accaagtgtc gtattgggaa agagacgggg agagaagtgt tggagatgct 360
ctttagtcag gcctgagtca cttgccaac cctggagttg gagttgggga tggagccagg 420
atctccaaac cacatgcccc tagagtttca gggaaaatat ggattgtgaa ttgaagatgg 480
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<210> 16
<211> 27
<212> PRT
<213> Homo sapiens

<400> 16
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Glu Asn Pro Ser Ser Cys Asp Leu Ala Val
20 25

<210> 17
 <211> 99
 <212> DNA
 <213> Homo sapiens

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<210> 18
 <211> 2608
 <212> DNA
 <213> Homo sapiens

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<210> 19

<211> 236

<212> PRT

<213> Homo sapiens

<400> 19

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Met Glu Ser Arg Pro Pro Ala Gln Thr Ser Leu Pro Ala Ser Ser Gly
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Leu Asp Asp Leu Asp Leu Leu Gly Lys Thr Leu Leu Gln Gln Ser Leu
      20                      25                      30

Pro Pro Glu Ser Gln Gln Val Arg Trp Glu Lys Gln Gln Pro Thr Pro
      35                      40                      45

Arg Leu Thr Leu Arg Asp Leu Gln Asn Lys Ser Ser Ser Cys Ser Ser
      50                      55                      60

Pro Ser Ser Ser Ala Thr Ser Leu Leu His Thr Val Ser Pro Glu Pro
      65                      70                      75                      80

Pro Arg Pro Pro Gln Gln Pro Val Pro Thr Glu Leu Ser Leu Ala Ser
      85                      90                      95

Ile Thr Val Pro Leu Glu Ser Ile Lys Pro Ser Asn Ile Leu Pro Val
      100                     105                     110

Thr Val Tyr Asp Gln His Gly Phe Arg Ile Leu Phe His Phe Ala Arg
      115                     120                     125

Asp Pro Leu Pro Gly Arg Ser Asp Val Leu Val Val Val Val Ser Met
      130                     135                     140

Leu Ser Thr Ala Pro Gln Pro Ile Arg Asn Ile Val Phe Gln Ser Ala
      145                     150                     155                     160

Val Pro Lys Val Met Lys Val Lys Leu Gln Pro Pro Ser Gly Thr Glu
      165                     170                     175

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Leu Pro Ala Phe Asn Pro Ile Val His Pro Ser Ala Ile Thr Gln Val
 180 185 190

Leu Leu Leu Ala Asn Pro Gln Lys Glu Lys Val Arg Leu Arg Tyr Lys
 195 200 205

Leu Thr Phe Thr Met Gly Asp Gln Thr Tyr Asn Glu Met Gly Asp Val
 210 215 220

Asp Gln Phe Pro Pro Pro Glu Thr Trp Gly Ser Leu
 225 230 235

<210> 20

<211> 328

<212> DNA

<213> Homo sapiens

<400> 20

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 agagaatcca aacaatcaca cctccagta ctggaaggac cacaacatcg tgacagcaga 180
 agtccactgg gctaacctga ctgtcagtga atgccaggag atgcatggag agttcatggg 240
 atctgcgtgc ggccatcatg gacctacac tctgatgtc ctcttttggg cctgtattct 300
 ctttttcacc accttcaccc tctcaagc 328

<210> 21

<211> 87

<212> PRT

<213> Homo sapiens

<400> 21

Met His Ser Gln Leu Asp His Leu Ser Leu Tyr Tyr Cys Arg Cys Thr
 1 5 10 15

Leu Pro Glu Asn Pro Asn Asn His Thr Leu Gln Tyr Trp Lys Asp His
 20 25 30

Asn Ile Val Thr Ala Glu Val His Trp Ala Asn Leu Thr Val Ser Glu
 35 40 45

Cys Gln Glu Met His Gly Glu Phe Met Gly Ser Ala Cys Gly His His
 50 55 60

Gly Pro Tyr Thr Pro Asp Val Leu Phe Trp Ser Cys Ile Leu Phe Phe
 65 70 75 80

Thr Thr Phe Ile Leu Ser Ser
 85

<210> 22

<211> 326

<212> DNA

<213> Homo sapiens

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<221> unsure

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 tggaataana cgtggattgg gtcaactgat taccagcttg ttaggagtc tctgtgtgag 180
 acatgggtgg ataattgtga agttctcact gtatgtggat gttcatgtga aagatagtac 240
 tttcttcccg taaatatctt ttgatttcca tttgtatgga atcccaatga atgtatcttt 300
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<210> 23
 <211> 194
 <212> DNA
 <213> Homo sapiens

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 <222> (55)

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<400> 23
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 tctccncaag aaacccttac agatgagtgc acatttgggc catgatcgat accncatgat 180
 ggcttatact gtat 194

<210> 24

<211> 396
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (139)

<400> 24
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 accagtgttg ccatttcant ctggaagata tgctctatgc tgcttcatcc ataaagagta 180
 attatttggg gttcatggcg gaactgttct ggtgggttga agtgggtgaag ccgtcttttg 240
 tacagcctcg tgttgttcgt ccacaaggag ctgaacctgt aaaagatatg ccttcaattc 300
 ctgtcttgaa tgctgccaaa agaaatgtct tagatagtag ttctgacttc ccttcaagtg 360
 gggaaggagc tacatttaca cagtctcatc tcgagg 396

<210> 25
 <211> 113
 <212> PRT
 <213> Homo sapiens

<220>
 <221> UNSURE
 <222> (28)

<400> 25
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 20 25 30
 Leu Tyr Ala Ala Ser Ser Ile Lys Ser Asn Tyr Leu Val Phe Met Ala
 35 40 45
 Glu Leu Phe Trp Trp Phe Glu Val Val Lys Pro Ser Phe Val Gln Pro
 50 55 60
 Arg Val Val Arg Pro Gln Gly Ala Glu Pro Val Lys Asp Met Pro Ser
 65 70 75 80
 Ile Pro Val Leu Asn Ala Ala Lys Arg Asn Val Leu Asp Ser Ser Ser
 85 90 95
 Asp Phe Pro Ser Ser Gly Glu Gly Ala Thr Phe Thr Gln Ser His Leu
 100 105 110
 Glu

<210> 26
 <211> 336
 <212> DNA
 <213> Homo sapiens

<220>
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<221> unsure

<222> (123)

<400> 26

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aantcagctc cggaacaac agttggaagc agaaatggag cataagaagg aggaaacaag 180
gcgtaaaact gaggaagaac gtcagaagaa agaagatgag agagcacgca gagaatttat 240
taggcaagaa tatatgaggc ggaaacaact gaaactaatg gaagatatgg atacagtaat 300
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<210> 27

<211> 917

<212> DNA

<213> Homo sapiens

<400> 27

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accctctctg tcaaattctc cagtgaactt ccagttttta catgatctgg ctctactac 180
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tacctaattg agattatggg ttgatggggg cagcaaacca ccatggcaca tgtgtacct 840
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<210> 28

<211> 76

<212> PRT

<213> Homo sapiens

<400> 28

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Met Glu Phe Arg Ser Cys Leu Pro Leu Cys Ser Asn Ser Pro Val Thr
  1                      5                      10                     15

Phe Gln Phe Leu His Asp Leu Ala Pro Thr Thr Cys Leu Thr Val Phe
      20                      25                      30

Pro Thr Thr Leu Leu Pro Phe Leu Leu Leu Ile Asn Thr Gly Leu Met
      35                      40                      45

Val Phe Pro Leu Thr Cys Gln Ala Cys Leu Thr Leu Ser Cys Leu Arg
      50                      55                      60

Ala Leu Leu Phe Pro Leu Pro Gly Thr Phe Phe Pro
      65                      70                      75

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<210> 29

<211> 351

<212> DNA

<213> Homo sapiens

<400> 29

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agccccctatg atggagacct caccamtacc tcctcctccc tcttcacga cagcctcacc 180
acagaagatg acaccaagtt gaatccctat gcaggaggag acggccttca gaacaacctg 240
tcccccaaga caaagggcac tcctgtgcac ctgggcacca tcgtgggcat cgtgctggca 300
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<210> 30

<211> 108

<212> PRT

<213> Homo sapiens

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<221> UNSURE

<222> (40)

<400> 30

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Phe Gln Asp Glu Asp His Asp Ser Ala Ser Pro Asp Thr Ser Phe Ser
      20              25              30

Pro Tyr Asp Gly Asp Leu Thr Xaa Thr Ser Ser Ser Leu Phe Ile Asp
      35              40              45

Ser Leu Thr Thr Glu Asp Asp Thr Lys Leu Asn Pro Tyr Ala Gly Gly
      50              55              60

Asp Gly Leu Gln Asn Asn Leu Ser Pro Lys Thr Lys Gly Thr Pro Val
      65              70              75              80

His Leu Gly Thr Ile Val Gly Ile Val Leu Ala Val Leu Leu Val Ala
      85              90              95

Ala Ile Ile Leu Ala Gly Ile Tyr Ile Asn Gly His
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<210> 31

<211> 179

<212> DNA

<213> Homo sapiens

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<221> unsure

<222> (24)

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 ataaagtccc tttcctnget ccaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 179

<210> 32
 <211> 3906
 <212> DNA
 <213> Homo sapiens

<400> 32
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 gactgagctt caatgcattt ggcaaacctt gagctacatg aagtgttctt ggctccctgg 360
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 tgagacacat aatgttttct acgtccaaga ggctaaaatg gagaatccag aatttgagag 780
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 <212> PRT
 <213> Homo sapiens

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 20              25              30

Glu Asn Ile Phe Arg Glu Gly Gln Tyr Leu Gly Cys Ser Phe Asp Leu
 35              40              45

Thr Lys Val Lys Asp Ser Ser Phe Glu Gln His Ser Val Gln Ile Met
 50              55              60

Val Lys Asp Asn Ala Gly Lys Ile Lys Pro Ser Phe Asn Ile Val Pro
 65              70              75              80

Leu Thr Ser Arg Val Lys Pro Asp Pro Pro His Ile Lys Asn Leu Ser

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85 90 95
 Phe His Asn Asp Asp Leu Tyr Val Gln Trp Glu Asn Pro Gln Asn Phe
 100 105 110
 Ile Ser Arg Cys Leu Phe Tyr Glu Val Glu Val Asn Asn Ser Gln Thr
 115 120 125
 Glu Thr His Asn Val Phe Tyr Val Gln Glu Ala Lys Cys Glu Asn Pro
 130 135 140
 Glu Phe Glu Arg Asn Val Glu Asn Thr Ser Cys Phe Met Val Pro Gly
 145 150 155 160
 Val Leu Pro Asp Thr Leu Asn Thr Val Arg Ile Arg Val Lys Thr Asn
 165 170 175
 Lys Leu Cys Tyr Glu Asp Asp Lys Leu Trp Ser Asn Trp Ser Gln Glu
 180 185 190
 Met Ser Ile Gly Lys Lys Arg Asn Ser Thr Leu Tyr Ile Thr Met Leu
 195 200 205
 Leu Ile Val Pro Val Ile Val Ala Gly Ala Ile Ile Val Leu Leu Leu
 210 215 220
 Tyr Leu Lys Arg Leu Lys Ile Ile Ile Phe Pro Pro Ile Pro Asp Pro
 225 230 235 240
 Gly Lys Ile Phe Lys Glu Met Phe Gly Asp Gln Asn Asp Asp Thr Leu
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 <211> 1605
 <212> DNA
 <213> Homo sapiens

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<210> 35

<211> 241

<212> PRT

<213> Homo sapiens

<400> 35

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			20					25					30		
Ser	Ile	Asp	Gly	Ala	Ser	Phe	Leu	Lys	Ile	Phe	Gly	Pro	Leu	Ser	Ser
		35					40					45			
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	50					55					60				
Val	Val	Val	Phe	Ala	Leu	Gly	Phe	Leu	Gly	Cys	Tyr	Gly	Ala	Lys	Thr
65					70					75				80	
Glu	Ser	Lys	Cys	Ala	Leu	Val	Thr	Phe	Phe	Phe	Ile	Leu	Leu	Leu	Ile
				85					90					95	
Phe	Ile	Ala	Glu	Val	Ala	Ala	Ala	Val	Val	Ala	Leu	Val	Tyr	Thr	Thr
		100						105					110		
Met	Ala	Glu	His	Phe	Leu	Thr	Leu	Leu	Val	Val	Pro	Ala	Ile	Lys	Lys
	115						120					125			
Asp	Tyr	Gly	Ser	Gln	Glu	Asp	Phe	Thr	Gln	Val	Trp	Asn	Thr	Thr	Met
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Lys	Gly	Leu	Lys	Cys	Cys	Gly	Phe	Thr	Asn	Tyr	Thr	Asp	Phe	Glu	Asp
145				150						155				160	
Ser	Pro	Tyr	Phe	Lys	Glu	Asn	Ser	Ala	Phe	Pro	Pro	Phe	Cys	Cys	Asn
				165					170					175	
Asp	Asn	Val	Thr	Asn	Thr	Ala	Asn	Glu	Thr	Cys	Thr	Lys	Gln	Lys	Ala
		180						185					190		
His	Asp	Gln	Lys	Val	Glu	Gly	Cys	Phe	Asn	Gln	Leu	Leu	Tyr	Asp	Ile
	195						200						205		
Arg	Thr	Asn	Ala	Val	Thr	Val	Gly	Gly	Val	Ala	Ala	Gly	Ile	Gly	Gly
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 <212> DNA
 <213> Homo sapiens

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<210> 37
 <211> 106
 <212> PRT
 <213> Homo sapiens

<220>
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 <222> (96)

<400> 37
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 Arg Leu Leu Ser Thr Ser Pro Ala Leu Gln Gly Thr Pro Ala Ser Arg
 35 40 45
 Gly Phe Phe Ala Ala Ala Ile Leu Phe Leu Ser Gln Ser His Val Ala
 50 55 60
 Arg Ala Thr Pro Gly Ser Asp Gln Ala Val Leu Ala Leu Ser Pro Glu
 65 70 75 80
 Tyr Glu Gly Ile Trp Ala Asp Leu Gln Glu Leu Trp Phe Leu Gly Xaa
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<212> DNA
<213> Homo sapiens

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aaaaa 245

<210> 39
<211> 2384
<212> DNA
<213> Homo sapiens

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<210> 40

<211> 614

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (607)

<400> 40

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Glu Val Pro Ser Met Thr Ile Leu Asp Lys Lys Asp Gly Glu Gln Ala
      20             25             30

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Lys Ala Leu Phe Glu Lys Val Arg Lys Phe Arg Ala His Val Glu Asp
  35             40             45

```

```

Ser Asp Leu Ile Tyr Lys Leu Tyr Val Val Gln Thr Val Ile Lys Thr
  50             55             60

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Ala Lys Phe Ile Phe Ile Leu Cys Tyr Thr Ala Asn Phe Val Asn Ala
  65             70             75             80

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Ile Ser Phe Glu His Val Cys Lys Pro Lys Val Glu His Leu Ile Gly
      85             90             95

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Tyr Glu Val Phe Glu Cys Thr His Asn Met Ala Tyr Met Leu Lys Lys
  100            105            110

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Leu Leu Ile Ser Tyr Ile Ser Ile Ile Cys Val Tyr Gly Phe Ile Cys
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 130 135 140
 Phe Glu Lys Val Arg Glu Glu Ser Ser Phe Ser Asp Ile Pro Asp Val
 145 150 155 160
 Lys Asn Asp Phe Ala Phe Leu Leu His Met Val Asp Gln Tyr Asp Gln
 165 170 175
 Leu Tyr Ser Lys Arg Phe Gly Val Phe Leu Ser Glu Val Ser Glu Asn
 180 185 190
 Lys Leu Arg Glu Ile Ser Leu Asn His Glu Trp Thr Phe Glu Lys Leu
 195 200 205
 Arg Gln His Ile Ser Arg Asn Ala Gln Asp Lys Gln Glu Leu His Leu
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 Phe Met Leu Ser Gly Val Pro Asp Ala Val Phe Asp Leu Thr Asp Leu
 225 230 235 240
 Asp Val Leu Lys Leu Glu Leu Ile Pro Glu Ala Lys Ile Pro Ala Lys
 245 250 255
 Ile Ser Gln Met Thr Asn Leu Gln Glu Leu His Leu Cys His Cys Pro
 260 265 270
 Ala Lys Val Glu Gln Thr Ala Phe Ser Phe Leu Arg Asp His Leu Arg
 275 280 285
 Cys Leu His Val Lys Phe Thr Asp Val Ala Glu Ile Pro Ala Trp Val
 290 295 300
 Tyr Leu Leu Lys Asn Leu Arg Glu Leu Tyr Leu Ile Gly Asn Leu Asn
 305 310 315 320
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 340 345 350
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 370 375 380
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 Ala Ile Phe Ser Leu Ser Asn Leu Gln Glu Leu Asp Leu Lys Ser Asn
 405 410 415
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 420 425 430

Leu Thr Cys Leu Lys Leu Trp His Asn Lys Ile Val Thr Ile Pro Pro
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 485 490 495
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 Asp Ile Leu Pro Lys Gln Leu Phe Lys Cys Ile Lys Leu Arg Thr Leu
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 545 550 555 560
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tagaagtatc ccacaaaagt gaaattgcta atgccccgga tggagctggg tcattgcctt 1200
gcacagaatt gccccatgac ctttctttga agaacataca acccaaagtt gaagagaaaa 1260
tcagtttctc agatgacttt tctaaaaatg ggtctgctac atcaaagggt ctcttattgc 1320
ctccagatgt ttctgctttg gccactcaag cagagataga gagcatagtt aaacccaaag 1380
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gagacattaa gaagactgga gtgggtgttg gtgccagcct attcctgctg ctttcattga 1560
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ttaagtattg taagctgcta tgtatggatt taaaccgtaa tcatatcttt ttcctatctg 2280
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<210> 42

<211> 642

<212> PRT

<213> Homo sapiens

<400> 42

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Met Pro Glu Gly Leu Thr Pro Asp Leu Val Gln Glu Ala Cys Glu Ser
  1              5              10              15

Glu Leu Asn Glu Val Thr Gly Thr Lys Ile Ala Tyr Glu Thr Lys Met
          20              25              30

Asp Leu Val Gln Thr Ser Glu Val Met Gln Glu Ser Leu Tyr Pro Ala
          35              40              45

Ala Gln Leu Cys Pro Ser Phe Glu Glu Ser Glu Ala Thr Pro Ser Pro
          50              55              60

Val Leu Pro Asp Ile Val Met Glu Ala Pro Leu Asn Ser Ala Val Pro
          65              70              75              80

Ser Ala Gly Ala Ser Val Ile Gln Pro Ser Ser Ser Pro Leu Glu Ala
          85              90              95

Ser Ser Val Asn Tyr Glu Ser Ile Lys His Glu Pro Glu Asn Pro Pro
          100             105             110

Pro Tyr Glu Glu Ala Met Ser Val Ser Leu Lys Lys Val Ser Gly Ile
          115             120             125

Lys Glu Glu Ile Lys Glu Pro Glu Asn Ile Asn Ala Ala Leu Gln Glu
          130             135             140

Thr Glu Ala Pro Tyr Ile Ser Ile Ala Cys Asp Leu Ile Lys Glu Thr
          145             150             155             160

```

Lys Leu Ser Ala Glu Pro Ala Pro Asp Phe Ser Asp Tyr Ser Glu Met
 165 170 175
 Ala Lys Val Glu Gln Pro Val Pro Asp His Ser Glu Leu Val Glu Asp
 180 185 190
 Ser Ser Pro Asp Ser Glu Pro Val Asp Leu Phe Ser Asp Asp Ser Ile
 195 200 205
 Pro Asp Val Pro Gln Lys Gln Asp Glu Thr Val Met Leu Val Lys Glu
 210 215 220
 Ser Leu Thr Glu Thr Ser Phe Glu Ser Met Ile Glu Tyr Glu Asn Lys
 225 230 235 240
 Glu Lys Leu Ser Ala Leu Pro Pro Glu Gly Gly Lys Pro Tyr Leu Glu
 245 250 255
 Ser Phe Lys Leu Ser Leu Asp Asn Thr Lys Asp Thr Leu Leu Pro Asp
 260 265 270
 Glu Val Ser Thr Leu Ser Lys Lys Glu Lys Ile Pro Leu Gln Met Glu
 275 280 285
 Glu Leu Ser Thr Ala Val Tyr Ser Asn Asp Asp Leu Phe Ile Ser Lys
 290 295 300
 Glu Ala Gln Ile Arg Glu Thr Glu Thr Phe Ser Asp Ser Ser Pro Ile
 305 310 315 320
 Glu Ile Ile Asp Glu Phe Pro Thr Leu Ile Ser Ser Lys Thr Asp Ser
 325 330 335
 Phe Ser Lys Leu Ala Arg Glu Tyr Thr Asp Leu Glu Val Ser His Lys
 340 345 350
 Ser Glu Ile Ala Asn Ala Pro Asp Gly Ala Gly Ser Leu Pro Cys Thr
 355 360 365
 Glu Leu Pro His Asp Leu Ser Leu Lys Asn Ile Gln Pro Lys Val Glu
 370 375 380
 Glu Lys Ile Ser Phe Ser Asp Asp Phe Ser Lys Asn Gly Ser Ala Thr
 385 390 395 400
 Ser Lys Val Leu Leu Leu Pro Pro Asp Val Ser Ala Leu Ala Thr Gln
 405 410 415
 Ala Glu Ile Glu Ser Ile Val Lys Pro Lys Val Leu Val Lys Glu Ala
 420 425 430
 Glu Lys Lys Leu Pro Ser Asp Thr Glu Lys Glu Asp Arg Ser Pro Ser
 435 440 445
 Ala Ile Phe Ser Ala Glu Leu Ser Lys Thr Ser Val Val Asp Leu Leu
 450 455 460
 Tyr Trp Arg Asp Ile Lys Lys Thr Gly Val Val Phe Gly Ala Ser Leu
 465 470 475 480

Phe Leu Leu Leu Ser Leu Thr Val Phe Ser Ile Val Ser Val Thr Ala
 485 490 495
 Tyr Ile Ala Leu Ala Leu Leu Ser Val Thr Ile Ser Phe Arg Ile Tyr
 500 505 510
 Lys Gly Val Ile Gln Ala Ile Gln Lys Ser Asp Glu Gly His Pro Phe
 515 520 525
 Arg Glu Val Ala Ile Ser Glu Glu Leu Val Gln Lys Tyr Ser Asn Ser
 530 535 540
 Ala Leu Gly His Val Asn Cys Thr Ile Lys Glu Leu Arg Arg Leu Phe
 545 550 555 560
 Leu Val Asp Asp Leu Val Asp Ser Leu Lys Phe Ala Val Leu Met Trp
 565 570 575
 Val Phe Thr Tyr Val Gly Ala Leu Phe Asn Gly Leu Thr Leu Leu Ile
 580 585 590
 Leu Ala Leu Ile Ser Leu Phe Ser Val Pro Val Ile Tyr Glu Arg His
 595 600 605
 Gln Ala Gln Ile Asp His Tyr Leu Gly Leu Ala Asn Lys Asn Val Lys
 610 615 620
 Asp Ala Met Ala Lys Ile Gln Ala Lys Ile Pro Gly Leu Lys Arg Lys
 625 630 635 640

Ala Glu

<210> 43
 <211> 344
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (13)

<220>
 <221> unsure
 <222> (39)

<220>
 <221> unsure
 <222> (185)

<220>
 <221> unsure
 <222> (260)

<400> 43
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 gccgtcgggc acagtcccg tgctcttctg ttctcagtc ttgcgcgac cctcgtcggt 120
 gccacacggg gcgggctaca agctgctcat ccagaagttc ctcagcctgt acggcgacca 180
 gatcnacatg caccgcaa at tcgtggtgca gctgttcgcc gaggagtggg gccagtacgt 240

ggacttgccc aagggtcttcn cggtgagcga gcgctgcaag gtgcgcctcg tgccgctgca 300
tatccagctc actaccctgg gaaatcttac accttcaagc actg 344

<210> 44
<211> 631
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (73)

<220>
<221> unsure
<222> (369)

<400> 44
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aaagtaaaag cantacatcc acattaacat tataacatct tacagtaata taaaagccaa 120
atcattgttg gtacgtcatt ttctttaag tgaacaattt aagaaaactt cacaagagtc 180
tgcacttttg aaagatacga tcagagtaca cagtagagac aaaacaggca tcttcattgt 240
aatttttttt aataaataaa agcacattaa caaaaaagga aggtaagcag caccggaagc 300
ctttgacgtt tgtaactaaa tgctggtact caattgaatc gagctgggta agtttacta 360
ggaggcgcn aaaaaggagcc gtttttgact taacatttta attctagtag agataagaag 420
agcttggtg ggcttacagt ccttcacctg actgtccttc accagtgagt agcataccag 480
ttcttcaa at gtcctatact ttggaaagca gacccgactc tggagcactc gccttaatta 540
gattctgaat ttcttgaat ttggatggt ccttatcagc taccagctga agcagaacag 600
cctcactcgt ggtcactatg atcccgggtc g 631

<210> 45
<211> 22
<212> PRT
<213> Homo sapiens

<400> 45
Met Val Leu Ile Ser Tyr Gln Leu Lys Gln Asn Ser Leu Thr Arg Gly
1 5 10 15

His Tyr Asp Pro Gly Ser
20

<210> 46
<211> 70
<212> DNA
<213> Homo sapiens

<400> 46
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 60
aaaaaaaaa 70

<210> 47
<211> 428
<212> DNA
<213> Homo sapiens

<400> 47
agcacgcggt cctgcccggt gacggggcaa cgctggcaga tgtgatgcgc cagcggggca 60
tcaacatgct ctacctgggc aagggtgctg agctggtgct gcggarcccg gcccgccacc 120
agctggacca cgtctttaa atcggcattg gagaactcat caccgctcg sccaagcaca 180

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tcttcaagac gtacttacag ggagtcgagc tctccggcct ctcagccgcc atcagccact 240
tcttgaactg cttcctgagc tcttaccctaa acccctgtggc ccacctgccc gccgacgagc 300
tggtctccaa gaagcgggaat aagaggagga aaaaccggcc cccggggggct gcagataaca 360
cagcctgggc tgtcatgacc ccccaggagc tctggaagaa catctgccag gaggccaaga 420
actacttt                                     428

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<210> 48
<211> 128
<212> PRT
<213> Homo sapiens

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<220>
<221> UNSURE
<222> (21)

```

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<220>
<221> UNSURE
<222> (43)

```

```

<400> 48
Met Arg Gln Arg Gly Ile Asn Met Arg Tyr Leu Gly Lys Val Leu Glu
  1             5             10             15
Leu Val Leu Arg Xaa Pro Ala Arg His Gln Leu Asp His Val Phe Lys
      20             25             30
Ile Gly Ile Gly Glu Leu Ile Thr Arg Ser Xaa Lys His Ile Phe Lys
      35             40             45
Thr Tyr Leu Gln Gly Val Glu Leu Ser Gly Leu Ser Ala Ala Ile Ser
      50             55             60
His Phe Leu Asn Cys Phe Leu Ser Ser Tyr Pro Asn Pro Val Ala His
      65             70             75             80
Leu Pro Ala Asp Glu Leu Val Ser Lys Lys Arg Asn Lys Arg Arg Lys
      85             90             95
Asn Arg Pro Pro Gly Ala Ala Asp Asn Thr Ala Trp Ala Val Met Thr
      100            105            110
Pro Gln Glu Leu Trp Lys Asn Ile Cys Gln Glu Ala Lys Asn Tyr Phe
      115            120            125

```

```

<210> 49
<211> 245
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> unsure
<222> (46)

```

```

<220>
<221> unsure
<222> (138)

```

```

<220>
<221> unsure

```

<222> (147)

<400> 49

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 cggagagccg cttatgggtg tgggtccgtcc agacaccttg tttcaagggg gatgggcgtg 120
 agcgggcaag cagagcanc caccgntga gcaagaactt tttttgttt ttaaaccatc 180
 acgtcctcat ttcacattgg aataaagtga gtttttgaaa aaaaaaaaaa aaaaaaaaaa 240
 aaaaaa 245

<210> 50

<211> 566

<212> DNA

<213> Homo sapiens

<400> 50

cagtgagccc tttgaaaaat aaacatccag atgaagatgc tgtggaagct gaggggcatg 60
 aggtaaaaag actcagggtt gacaagaag gtgaagtcag agaaacagcc agtcaaacga 120
 cttccagcga aatttcttca gttatggtag gagaacaga agcatcatct tcattctcagg 180
 ataaagacaa agatagccgt tgtwcccgcc agcactgtwc agaagaggat gaagaagagg 240
 atgaagagga agaagaagag tcttttatga catcaagaga aatgatccca gaaagaaaaa 300
 atcaagaaaa agaattctgat gatgccttaa ctgtgaatga agagacttct gaggaaaata 360
 atcaaatgga ggaattctgat gtgtctcaag ctgagaaaga tttgctacat tctgaaggta 420
 gtgaaaacga aggccttgta agtagtagtt cttctgactg cctgaaaca gaagaattag 480
 taggatccaa ttccagtaaa actggagaga ttttttcaga atcatccatg gaaatgatg 540
 acgaagccac agaagtcacc gatgaa 566

<210> 51

<211> 141

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (21)

<220>

<221> UNSURE

<222> (26)

<400> 51

Met Val Gly Glu Thr Glu Ala Ser Ser Ser Ser Gln Asp Lys Asp Lys
 1 5 10 15
 Asp Ser Arg Cys Xaa Arg Gln His Cys Xaa Glu Glu Asp Glu Glu Glu
 20 25 30
 Asp Glu Glu Glu Glu Glu Ser Phe Met Thr Ser Arg Glu Met Ile
 35 40 45
 Pro Glu Arg Lys Asn Gln Glu Lys Glu Ser Asp Asp Ala Leu Thr Val
 50 55 60
 Asn Glu Glu Thr Ser Glu Glu Asn Asn Gln Met Glu Glu Ser Asp Val
 65 70 75 80
 Ser Gln Ala Glu Lys Asp Leu Leu His Ser Glu Gly Ser Glu Asn Glu
 85 90 95
 Gly Pro Val Ser Ser Ser Ser Asp Cys Arg Glu Thr Glu Glu Leu
 100 105 110

Val Gly Ser Asn Ser Ser Lys Thr Gly Glu Ile Leu Ser Glu Ser Ser
 115 120 125

Met Glu Asn Asp Asp Glu Ala Thr Glu Val Thr Asp Glu
 130 135 140

<210> 52

<211> 531

<212> DNA

<213> Homo sapiens

<400> 52

tcacatcatggc tataaatacc aaaacgattt ggatccattt atgtttgtag gataatatac 60
 tactgactga cttgactgtc aggttcacaa cagctagatg atatatattat gactatgtct 120
 aatagttgaa ataaaaatctg aatattgatt tactataccc aagaggggag aaaaattaac 180
 cattgtaaat ttttaaaaat tttttcaaaa atgttaaaat gagggcaaatt taagtattaca 240
 aattttgaaa ttttcttttg aatatttatg aaattgtcag taaacttacc taagatcctg 300
 tgaccttttg atatttttta ttttaattgt agtgccatgg accattttgta aacaaattga 360
 tttacttttg ttggttgtaa gttgaagatt tagcattatg actttgaggt ctgtggtttt 420
 atttgtaaac ttgcaattgc tatatttgca agggcaaattg tatttcttta ttaataaaag 480
 tacaataatg gtgaatgtac caaaatgaca tcacttaaaa aaaaaaaaaa a 531

<210> 53

<211> 1163

<212> DNA

<213> Homo sapiens

<400> 53

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 ccgggacctca gggaccttc cccgagagac ggcaccatga cccagggaaa gctctccgtg 120
 gctaacaagc ccctgggacc gaggggcagc agcakgtgca tggcgagaag aaggagctcc 180
 agcagtgecc tcagccccac cctcctatga ggaaccacct ctggggaggg gatgaaggca 240
 ggggaccttc cccagcccc cacagcgggtg cctctccacc cttagctggg ctatgtggac 300
 cccagcagca gctccagcta tgacaacggt tccccaccg gagaccatga gctcttcacc 360
 actttcagct gggatgacca gaaagtctgt cgagtctttg tcagaaagg ctacaccatc 420
 ctgtctgattc agctgtggt gacctgggt gtcgtggctc tctttacttt ctgtgacct 480
 gtcaaggact atgtccaggc caaccaggc tggtagctgg catcctatgc tgtgttctt 540
 gcaacctacc tgacctggc ttgtctgtct ggaccaggga ggcatttccc ctggaacctg 600
 atttctctga ccgtctttac cctgtccatg gcctacctca ctgggatgct gtccagctac 660
 tacaacacca cctccgtgct gctgtgctg ggcacacgg ccttgtctg cctctcagtc 720
 accgtcttca gcttccagac caagtctgac ttcacctcct gccagggcgt gctcttcgtg 780
 cttctcatga ctcttttctt cagcggactc atcctggcca tctctctacc cttccaatat 840
 gtgccctggc tccatgcagt ttatgcagca ctgggagcgg gtgtatttac attgttctg 900
 gcaacttgaca ccagttgct gatgggtaac cgacgccact cgctgagccc tgaggagtat 960
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 ctttttggca ctaaccgaga atgaggagcc ctccctgcc caccgtctc cagagaatgc 1080
 gccctcctg gttccctgtc cctccctgc gctcctgcga gaccagatat aaaactagct 1140
 gcccaaccaa aaaaaaaaaa aaa 1163

<210> 54

<211> 270

<212> PRT

<213> Homo sapiens

<400> 54

Met Lys Ala Gly Ala Phe Pro Pro Ala Pro Thr Ala Val Pro Leu His
 1 5 10 15

Pro Ser Trp Ala Tyr Val Asp Pro Ser Ser Ser Ser Ser Tyr Asp Asn
 20 25 30
 Gly Phe Pro Thr Gly Asp His Glu Leu Phe Thr Thr Phe Ser Trp Asp
 35 40 45
 Asp Gln Lys Val Arg Arg Val Phe Val Arg Lys Val Tyr Thr Ile Leu
 50 55 60
 Leu Ile Gln Leu Leu Val Thr Leu Ala Val Val Ala Leu Phe Thr Phe
 65 70 75 80
 Cys Asp Pro Val Lys Asp Tyr Val Gln Ala Asn Pro Gly Trp Tyr Trp
 85 90 95
 Ala Ser Tyr Ala Val Phe Phe Ala Thr Tyr Leu Thr Leu Ala Cys Cys
 100 105 110
 Ser Gly Pro Arg Arg His Phe Pro Trp Asn Leu Ile Leu Leu Thr Val
 115 120 125
 Phe Thr Leu Ser Met Ala Tyr Leu Thr Gly Met Leu Ser Ser Tyr Tyr
 130 135 140
 Asn Thr Thr Ser Val Leu Leu Cys Leu Gly Ile Thr Ala Leu Val Cys
 145 150 155 160
 Leu Ser Val Thr Val Phe Ser Phe Gln Thr Lys Phe Asp Phe Thr Ser
 165 170 175
 Cys Gln Gly Val Leu Phe Val Leu Leu Met Thr Leu Phe Phe Ser Gly
 180 185 190
 Leu Ile Leu Ala Ile Leu Leu Pro Phe Gln Tyr Val Pro Trp Leu His
 195 200 205
 Ala Val Tyr Ala Ala Leu Gly Ala Gly Val Phe Thr Leu Phe Leu Ala
 210 215 220
 Leu Asp Thr Gln Leu Leu Met Gly Asn Arg Arg His Ser Leu Ser Pro
 225 230 235 240
 Glu Glu Tyr Ile Phe Gly Ala Leu Asn Ile Tyr Leu Asp Ile Ile Tyr
 245 250 255
 Ile Phe Thr Phe Phe Leu Gln Leu Phe Gly Thr Asn Arg Glu
 260 265 270

<210> 55

<211> 624

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (123)

<400> 55

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cgcggggcgg ggcggcggtt ggcactggct ccggactctg cccggccagg gcggcggttc 120
cancggggag ggcgacgtgg agcgccack tggakcgcc cgggggargc tggcggcggg 180
akgcgagggc cgggcggcgc akcakccakg agcgccacg gagstggacc cccagakccg 240
cgcgcgcccg cagcagttcc aggaaggatg ttacctttga cgatgacagt gtaaatcctg 300
ctgctgtccc ccacgggtca ggctgcccc aaggatggag tcacaaggcc agaattctgaa 360
gtgcagcatc agctcctgcc caaccccttc cagccaggcc aggagcagct cggacttctg 420
cagagctacc taaagggtact aggaaggaca gaagtgaac tggagcatct gagccgggag 480
caggttctcc tctacctctt tgccctccat gactatgacc agagtggaca gctggatggc 540
ctggagctgc tgtccatgtt gacagctgct ctggccctg gagctgcca cctctctacc 600
accaaccgg tgatcttgat agtg                                     624

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<210> 56
 <211> 119
 <212> PRT
 <213> Homo sapiens

```

<400> 56
Met Leu Pro Leu Thr Met Thr Val Leu Ile Leu Leu Leu Pro Thr
  1             5             10             15
Gly Gln Ala Ala Pro Lys Asp Gly Val Thr Arg Pro Glu Ser Glu Val
          20             25             30
Gln His Gln Leu Leu Pro Asn Pro Phe Gln Pro Gly Gln Glu Gln Leu
      35             40             45
Gly Leu Leu Gln Ser Tyr Leu Lys Gly Leu Gly Arg Thr Glu Val Gln
      50             55             60
Leu Glu His Leu Ser Arg Glu Gln Val Leu Leu Tyr Leu Phe Ala Leu
      65             70             75             80
His Asp Tyr Asp Gln Ser Gly Gln Leu Asp Gly Leu Glu Leu Leu Ser
          85             90             95
Met Leu Thr Ala Ala Leu Ala Pro Gly Ala Ala Asn Ser Pro Thr Thr
          100             105             110
Asn Pro Val Ile Leu Ile Val
          115

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<210> 57
 <211> 80
 <212> DNA
 <213> Homo sapiens

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<400> 57
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 60
aaaaaaaaaa aaaaaaaaaa

```

<210> 58
 <211> 2160
 <212> DNA
 <213> Homo sapiens

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<400> 58
agacagggaa tactttattc aaaacccatc acagaaatgg acagcttggg tctgtaacaa 60
agcattcatg ttttagagca taggtcagta attgtatatg agagcataca ctgtacata 120
caaattaact gatcagacca caacttttca atgtttaaaa cagaataagc ttcctgttaa 180

```

```

aagcagcacc tttgtgacgt ttttaacttta gtattcctct ccttcttccct caccctctcc 240
ttcaacagaa tccacaccaa cctcctcata atccttcttc gcagcacatg aatcacaggt 300
attcctactg caagcgggag gcggaggagc gggagcggc ggagcgcgag gcgcgcgaga 360
aagggcactt ggaacccacc gagctgctga tgaaccgggc ttacttgtag agcattaccc 420
ctcaggggta cctcgactcg gaggagagg agagtatgcc gagggatggc gagagcgaga 480
aggagcacga gaaagaagc gaggatggct acgggaagct gggcagacag gatggcgacg 540
aggagttcga ggaggaagag gaagaaagtg aaaataaaag tatggatacg gatcccgaaa 600
cgatacgaga tgaagaagag actggagatc actccatgga cgatagtctg gaggatggga 660
aaatggaaac caaatcagac cagcaggaag acaatatgga agatggcatg taataaacta 720
ctgcatttta agcttcttat ttttttttcc agtagtattg ttacctgctt gaaaacactg 780
ctgtgttaag ctgttcctgc acgtgcctga cgcttcagg aagctgtaga gagggacaga 840
aggggagggt cagccaagac agatgtagac ggagttggag ctgggtattg ttaaaaactg 900
cattatgcaa aaattttgta cagtgttaag gcctaaaaac tgtgtggttc agagactaat 960
tcctgtgttt aatagcattt atactttaag cacaactaga aaattgtaag aattgcactc 1020
tacttatgta tcaactacaa ctttaaaaaa ctatgtctaa tttatattaa tacattttta 1080
aaagggtgccc gcactaccat acatcagtat ttttattatt attattgtta ttccctttta 1140
atttaagtgt ctgcactac aatgcacgag tattatgatt cctctgtact ttccctttgc 1200
tattcatcaa tttccattt tttttttcag cttaagtaac cacacaattt taggcctcaa 1260
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gggtggtttta aaagccttat atgcaaacct tttaatctgt gtttctgcaa gtgccatcct 1440
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cctgttcttt gaagcaccca tgtcagtatt agaagaatag gcagcagttc cttagtttac 1560
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ttttatttat gtggtctatt ttatatctcc taattttatt tatttcatac tgtagtgtac 1740
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atttgggcaa attttacgta aagagaagag catttattgt gttttggaac attaatgtg 1860
agatgggatt tttcaatttt attattttat tttgttttt ttccaattac tggaaattcc 1920
aaatttggga acttttgata cgatcttctg aaaacactgt attttcgact gaaaattcca 1980
ctttcttcat cttgtttttt agctaaaaag agggactgtt aaatacaatg tatgatacca 2040
tgacaaaaat ctttcctgaa ttgtctttgt aaaagtatta ttgaattttc aatttgtaat 2100
ttcttttgaa aatgaccatg ctccaataaa aatgtagcca aactaaaaaa aaaaaaaaaa 2160

```

<210> 59

<211> 141

<212> PRT

<213> Homo sapiens

<400> 59

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Met Asn His Arg Tyr Ser Tyr Cys Lys Arg Glu Ala Glu Glu Arg Glu
  1                      5                      10                      15

Ala Ala Glu Arg Glu Ala Arg Glu Lys Gly His Leu Glu Pro Thr Glu
      20                      25                      30

Leu Leu Met Asn Arg Ala Tyr Leu Gln Ser Ile Thr Pro Gln Gly Tyr
      35                      40                      45

Ser Asp Ser Glu Glu Arg Glu Ser Met Pro Arg Asp Gly Glu Ser Glu
      50                      55                      60

Lys Glu His Glu Lys Glu Gly Glu Asp Gly Tyr Gly Lys Leu Gly Arg
      65                      70                      75                      80

Gln Asp Gly Asp Glu Glu Phe Glu Glu Glu Glu Glu Ser Glu Asn
      85                      90                      95

Lys Ser Met Asp Thr Asp Pro Glu Thr Ile Arg Asp Glu Glu Glu Thr
      100                      105                      110

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Gly Asp His Ser Met Asp Asp Ser Ser Glu Asp Gly Lys Met Glu Thr
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Lys Ser Asp His Glu Glu Asp Asn Met Glu Asp Gly Met
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<210> 60

<211> 2168

<212> DNA

<213> Homo sapiens

<400> 60

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<210> 61

<211> 595

<212> PRT

<213> Homo sapiens

<400> 61

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Lys Val Thr Arg Ile Gln Ser Met Asn Tyr Gly Thr Ile Lys Trp Phe
 20 25 30
 Phe His Val Ile Ile Phe Ser Tyr Val Cys Phe Ala Leu Val Ser Asp
 35 40 45
 Lys Leu Tyr Gln Arg Lys Glu Pro Val Ile Ser Ser Val His Thr Lys
 50 55 60
 Val Lys Gly Ile Ala Glu Val Lys Glu Glu Ile Val Glu Asn Gly Val
 65 70 75 80
 Lys Lys Leu Val His Ser Val Phe Asp Thr Ala Asp Tyr Thr Phe Pro
 85 90 95
 Leu Gln Gly Asn Ser Phe Phe Val Met Thr Asn Phe Leu Lys Thr Glu
 100 105 110
 Gly Gln Glu Gln Arg Leu Cys Pro Glu Tyr Pro Thr Arg Arg Thr Leu
 115 120 125
 Cys Ser Ser Asp Arg Gly Cys Lys Lys Gly Trp Met Asp Pro Gln Ser
 130 135 140
 Lys Gly Ile Gln Thr Gly Arg Cys Val Val His Glu Gly Asn Gln Lys
 145 150 155 160
 Thr Cys Glu Val Ser Ala Trp Cys Pro Ile Glu Ala Val Glu Glu Ala
 165 170 175
 Pro Arg Pro Ala Leu Leu Asn Ser Ala Glu Asn Phe Thr Val Leu Ile
 180 185 190
 Lys Asn Asn Ile Asp Phe Pro Gly His Asn Tyr Thr Thr Arg Asn Ile
 195 200 205
 Leu Pro Gly Leu Asn Ile Thr Cys Thr Phe His Lys Thr Gln Asn Pro
 210 215 220
 Gln Cys Pro Ile Phe Arg Leu Gly Asp Ile Phe Arg Glu Thr Gly Asp
 225 230 235 240
 Asn Phe Ser Asp Val Ala Ile Gln Gly Gly Ile Met Gly Ile Glu Ile
 245 250 255
 Tyr Trp Asp Cys Asn Leu Asp Arg Trp Phe His His Cys His Pro Lys
 260 265 270
 Tyr Ser Phe Arg Arg Leu Asp Asp Lys Thr Thr Asn Val Ser Leu Tyr
 275 280 285
 Pro Gly Tyr Asn Phe Arg Tyr Ala Lys Tyr Tyr Lys Glu Asn Asn Val
 290 295 300
 Glu Lys Arg Thr Leu Ile Lys Val Phe Gly Ile Arg Phe Asp Ile Leu
 305 310 315 320
 Val Phe Gly Thr Gly Gly Lys Phe Asp Ile Ile Gln Leu Val Val Tyr
 325 330 335

Ile Gly Ser Thr Leu Ser Tyr Phe Gly Leu Ala Ala Val Phe Ile Asp
 340 345 350
 Phe Leu Ile Asp Thr Tyr Ser Ser Asn Cys Cys Arg Ser His Ile Tyr
 355 360 365
 Pro Trp Cys Lys Cys Cys Gln Pro Cys Val Val Asn Glu Tyr Tyr Tyr
 370 375 380
 Arg Lys Lys Cys Glu Ser Ile Val Glu Pro Lys Pro Thr Leu Lys Tyr
 385 390 395 400
 Val Ser Phe Val Asp Glu Ser His Ile Arg Met Val Asn Gln Gln Leu
 405 410 415
 Leu Gly Arg Ser Leu Gln Asp Val Lys Gly Gln Glu Val Pro Arg Pro
 420 425 430
 Ala Met Asp Phe Thr Asp Leu Ser Arg Leu Pro Leu Ala Leu His Asp
 435 440 445
 Thr Pro Pro Ile Pro Gly Gln Pro Glu Glu Ile Gln Leu Leu Arg Lys
 450 455 460
 Glu Ala Thr Pro Arg Ser Arg Asp Ser Pro Val Trp Cys Gln Cys Gly
 465 470 475 480
 Ser Cys Leu Pro Ser Gln Leu Pro Glu Ser His Arg Cys Leu Glu Glu
 485 490 495
 Leu Cys Cys Arg Lys Lys Pro Gly Ala Cys Ile Thr Thr Ser Glu Leu
 500 505 510
 Phe Arg Lys Leu Val Leu Ser Arg His Val Leu Gln Phe Leu Leu Leu
 515 520 525
 Tyr Gln Glu Pro Leu Leu Ala Leu Asp Val Asp Ser Thr Asn Ser Arg
 530 535 540
 Leu Arg His Cys Ala Tyr Arg Cys Tyr Ala Thr Trp Arg Phe Gly Ser
 545 550 555 560
 Gln Asp Met Ala Asp Phe Ala Ile Leu Pro Ser Cys Cys Arg Trp Arg
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 580 585 590
 Ser Pro Tyr
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<210> 62

<211> 430

<212> DNA

<213> Homo sapiens

<400> 62

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 ctcaggtaat tggatgtga aaaagtgtct aaacgacgtt ggaatttgca agaagaagtg 180
 caaacctgaa gagatgcatg taaagaatgg ttgggcaatg tgcggcaaac aaagggactg 240
 ctgtgttcca gctgacagac gtgctaatta tctgttttc tgtgtccaga caaagactac 300
 aagaatttca acagtaacag caacaacagc aacaacaact ttgatgatga ctactgtctc 360
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 ctgctctagg 430

<210> 63

<211> 121

<212> PRT

<213> Homo sapiens

<400> 63

Met Lys Ser Leu Leu Phe Thr Leu Ala Val Phe Met Leu Leu Ala Gln
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 Leu Val Ser Gly Asn Trp Tyr Val Lys Lys Cys Leu Asn Asp Val Gly
 20 25 30
 Ile Cys Lys Lys Lys Cys Lys Pro Glu Glu Met His Val Lys Asn Gly
 35 40 45
 Trp Ala Met Cys Gly Lys Gln Arg Asp Cys Cys Val Pro Ala Asp Arg
 50 55 60
 Arg Ala Asn Tyr Pro Val Phe Cys Val Gln Thr Lys Thr Thr Arg Ile
 65 70 75 80
 Ser Thr Val Thr Ala Thr Thr Ala Thr Thr Thr Leu Met Met Thr Thr
 85 90 95
 Ala Ser Met Ser Ser Met Ala Pro Thr Arg Phe Ser His Trp Leu Asn
 100 105 110
 Ile Pro Ala Ser Val Ser Cys Ser Arg
 115 120

<210> 64

<211> 112

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (8)

<220>

<221> unsure

<222> (12)

<220>

<221> unsure

<222> (36)

<220>

<221> unsure

<222> (41)

<220>
<221> unsure
<222> (44)

<400> 64
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 112

<210> 65
<211> 324
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (1)

<220>
<221> unsure
<222> (69)

<220>
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<222> (74)

<220>
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<220>
<221> unsure
<222> (159)

<400> 65
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cgcanccggc gcagcggaga acgagagagg ggagcagana cagaatcgcc taagctgaag 180
tgtattggcg ccatcatggc tcaactgcggc ctccggctcc ttggctcggg tgattctcct 240
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<210> 66
<211> 794
<212> DNA
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<220>
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<220>
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<220>
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<220>
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<222> (184)

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<221> unsure

<222> (754)

<400> 66

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ttaactgatg aaaaaagtaa tggaacaatt gcccttgtgg atgattctga ggatcctgga 180
gccnatgtat ctaacataca gcttcagcaa aaaatttcaa gtctggagat taaactcaaa 240
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cacgaagccc tcagcattat tgtggatgaa tataaggcac tactgcagtc ttcagttaag 480
caacaagtag aagctattga aaaacagtac atttctgcaa ttgagaaaca ggcacacaag 540
tgtgaggagt tgctaaatgc tcagcatcag aggtctcttg aagtgtctaga tacagagaag 600
gaactgttaa aagaaaaaat aaaggaagct ttgattcagc aatctcaaga acagaaggaa 660
atattggaaa agtggtttgga ggaagaaagg caaagaaata aagaggcatt agtatccgct 720
gcaaaagcttg aaaaagaacc agtgaaggat gcanttttaa aattcgtaga agaagaaaga 780
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794

<210> 67

<211> 164

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (156)

<400> 67

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Met Glu Lys His Asn Val Leu Glu Lys Gly Phe Leu Lys Glu Lys Glu
  1             5             10             15
Gln Glu Ala Ile Ser Phe Gln Asp Arg Tyr Lys Glu Leu Gln Glu Lys
      20             25             30
His Lys Gln Glu Leu Glu Asp Met Arg Lys Ala Gly His Glu Ala Leu
      35             40             45
Ser Ile Ile Val Asp Glu Tyr Lys Ala Leu Leu Gln Ser Ser Val Lys
      50             55             60
Gln Gln Val Glu Ala Ile Glu Lys Gln Tyr Ile Ser Ala Ile Glu Lys
      65             70             75             80
Gln Ala His Lys Cys Glu Glu Leu Leu Asn Ala Gln His Gln Arg Leu
      85             90             95
Leu Glu Val Leu Asp Thr Glu Lys Glu Leu Leu Lys Glu Lys Ile Lys
      100            105            110
Glu Ala Leu Ile Gln Gln Ser Gln Glu Gln Lys Glu Ile Leu Glu Lys
      115            120            125
Cys Leu Glu Glu Glu Arg Gln Arg Asn Lys Glu Ala Leu Val Ser Ala
      130            135            140
Ala Lys Leu Glu Lys Glu Pro Val Lys Asp Ala Xaa Leu Lys Phe Val

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145

150

155

160

Glu Glu Glu Arg

<210> 68

<211> 1494

<212> DNA

<213> Homo sapiens

<400> 68

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ggcacggctc gggacggaga cgaaaccaga cagagggtca agtttacaga tgaccgtgtc 180
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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 1494

```

<210> 69

<211> 325

<212> PRT

<213> Homo sapiens

<400> 69

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Met Ser Ala Gln Ala Gln Met Arg Ala Leu Leu Asp Gln Leu Met Gly
  1                      5                      10                      15

Thr Ala Arg Asp Gly Asp Glu Thr Arg Gln Arg Val Lys Phe Thr Asp
      20                      25                      30

Asp Arg Val Cys Lys Ser His Leu Leu Asp Cys Cys Pro His Asp Ile
      35                      40                      45

Leu Ala Gly Thr Arg Met Asp Leu Gly Glu Cys Thr Lys Ile His Asp
      50                      55                      60

Leu Ala Leu Arg Ala Asp Tyr Glu Ile Ala Ser Lys Glu Arg Asp Leu
      65                      70                      75                      80

Phe Phe Glu Leu Asp Ala Met Asp His Leu Glu Ser Phe Ile Ala Glu

```

85					90					95					
Cys	Asp	Arg	Arg	Thr	Glu	Leu	Ala	Lys	Lys	Arg	Leu	Ala	Glu	Thr	Gln
			100					105					110		
Glu	Glu	Ile	Ser	Ala	Glu	Val	Ser	Ala	Lys	Ala	Gly	Lys	Val	His	Glu
		115					120					125			
Leu	Asn	Glu	Glu	Ile	Gly	Lys	Leu	Leu	Ala	Lys	Ala	Glu	Gln	Leu	Gly
	130					135					140				
Ala	Glu	Gly	Asn	Val	Asp	Glu	Ser	Gln	Lys	Ile	Leu	Met	Glu	Val	Glu
145						150					155				160
Lys	Val	Arg	Ala	Lys	Lys	Lys	Glu	Ala	Glu	Glu	Glu	Tyr	Arg	Asn	Ser
			165					170					175		
Met	Pro	Ala	Ser	Ser	Phe	Gln	Gln	Gln	Lys	Leu	Arg	Val	Cys	Glu	Val
			180					185					190		
Cys	Ser	Ala	Tyr	Leu	Gly	Leu	His	Asp	Asn	Asp	Arg	Arg	Leu	Ala	Asp
		195					200					205			
His	Phe	Gly	Gly	Lys	Leu	His	Leu	Gly	Phe	Ile	Gln	Ile	Arg	Glu	Lys
	210					215					220				
Leu	Asp	Gln	Leu	Arg	Lys	Thr	Val	Ala	Glu	Lys	Gln	Glu	Lys	Arg	Asn
225						230					235				240
Gln	Asp	Arg	Leu	Arg	Arg	Arg	Glu	Glu	Arg	Glu	Arg	Glu	Glu	Arg	Leu
			245					250					255		
Ser	Arg	Arg	Ser	Gly	Ser	Arg	Thr	Arg	Asp	Arg	Arg	Arg	Ser	Arg	Ser
			260					265					270		
Arg	Asp	Arg	Arg	Arg	Arg	Arg	Ser	Arg	Ser	Thr	Ser	Arg	Glu	Arg	Arg
	275						280					285			
Lys	Leu	Ser	Arg	Ser	Arg	Ser	Arg	Asp	Arg	His	Arg	Arg	His	Arg	Ser
	290					295					300				
Arg	Ser	Arg	Ser	His	Ser	Arg	Gly	His	Arg	Arg	Ala	Ser	Arg	Asp	Arg
305						310					315				320
Ser	Ala	Lys	Tyr	Lys											
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<210> 70

<211> 1761

<212> DNA

<213> Homo sapiens

<400> 70

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aggggtggcc cggagacggt gaagaaacca agacgcagag aggccaagcc ccttgcttg 180
ggtcacacag ccaaaggagg cagagccaga actcacaacc agatccagag gcaacaggga 240
catggccacc tgggacgaaa aggcagtcac ccgcagggcc aaggtggctc ccgctgagag 300
gatgagcaag ttcttaaggc acttcacggt cgtgggagac gactaccatg cctggaacat 360

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cgcacccagg gcccccttg acttcagggg catgttgagg aaactgttca gctcccacag 540
gtttcaggtc atcatcatct gcttggtggt tctggatgcc ctcttggtgc ttgctgagct 600
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ctacatgagc atcaccatct tggctctttt tatgatggag atcatcttta aattatttgt 720
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aaaaaaaaaa aaaaaaaaaa a 1761

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<210> 71

<211> 273

<212> PRT

<213> Homo sapiens

<400> 71

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Met Ala Thr Trp Asp Glu Lys Ala Val Thr Arg Arg Ala Lys Val Ala
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Pro Ala Glu Arg Met Ser Lys Phe Leu Arg His Phe Thr Val Val Gly
          20             25             30

Asp Asp Tyr His Ala Trp Asn Ile Asn Tyr Lys Lys Trp Glu Asn Glu
          35             40             45

Glu Glu Glu Glu Glu Glu Glu Gln Pro Pro Pro Thr Pro Val Ser Gly
          50             55             60

Glu Glu Gly Arg Ala Ala Ala Pro Asp Val Ala Pro Ala Pro Gly Pro
          65             70             75             80

Ala Pro Arg Ala Pro Leu Asp Phe Arg Gly Met Leu Arg Lys Leu Phe
          85             90             95

Ser Ser His Arg Phe Gln Val Ile Ile Ile Cys Leu Val Val Leu Asp
          100            105            110

Ala Leu Leu Val Leu Ala Glu Leu Ile Leu Asp Leu Lys Ile Ile Gln
          115            120            125

Pro Asp Lys Asn Asn Tyr Ala Ala Met Val Phe His Tyr Met Ser Ile
          130            135            140

Thr Ile Leu Val Phe Phe Met Met Glu Ile Ile Phe Lys Leu Phe Val
          145            150            155            160

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Phe Arg Leu Glu Phe Phe His His Lys Phe Glu Ile Leu Asp Ala Val
 165 170 175
 Val Val Val Val Ser Phe Ile Leu Asp Ile Val Leu Leu Phe Gln Glu
 180 185 190
 His Gln Phe Glu Ala Leu Gly Leu Leu Ile Leu Leu Arg Leu Trp Arg
 195 200 205
 Val Ala Arg Ile Ile Asn Gly Ile Ile Ile Ser Val Lys Thr Arg Ser
 210 215 220
 Glu Arg Gln Leu Leu Arg Leu Lys Gln Met Asn Val Gln Leu Ala Ala
 225 230 235 240
 Lys Ile Gln His Leu Glu Phe Ser Cys Ser Glu Lys Glu Gln Glu Ile
 245 250 255
 Glu Arg Leu Asn Lys Leu Leu Arg Gln His Gly Leu Leu Gly Glu Val
 260 265 270

Asn

<210> 72
 <211> 928
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (367)

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 <222> (467)

<220>
 <221> unsure
 <222> (508)

<220>
 <221> unsure
 <222> (539)

<400> 72
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 gccaccatga agattgataa ccctcacata acatatactg ccagggtccc agtcgatgtc 120
 catgaataca acctaacgca tctgcagcct tccacagatt atgaagtgtg tctcacagtg 180
 tccaatatct atcagcagac tcaaaaagtca tgcgtaaatg tcacaaccaa aaatgccgcc 240
 ttgcgagtg acatctctga tcaagaaacc agtacagccc ttgctgcagt aatgggggtmt 300
 atgtttgccg tcattagcct tgcgtccatt gctgtggtac tttgccaaaa gatttaagag 360
 aaaaaantac caccactcat taaaaaagta tatgcaaaaa acctcttcaa tcccactaaa 420
 tgagctgtac ccaccactca ttaacctntg ggaaggtgac agcgagnaag acaaagatgg 480

```

ttttgcagac accaagccaa cccaggtnga cacatccaga aggtattaca tgtggtaant 540
cagaggatat tttgcttctg gtagtaagga gcacaaagac gtttttgctt tattctgcaa 600
aagtgaacaa gttgaagact tttgtatttt tgactttgct agtttggtggc agagtggaga 660
ggacgggtgg atatttcaaa ttttttttagt atagcgtatc gcaagggttt gacacggctg 720
ccagcgactc taggcttcca gtctgtgttt ggtttttatt cttatcatta ttatgattgt 780
tattatatta ttattttatt ttagttgttg tgctaaactc aataatgctg ttctaactac 840
agtgtcaat aaaatgatta atgacaggat ggggttcccc tgtgctttta ccagtagcat 900
gacccttctt gaagccatcc gtagaaag 928

```

<210> 73

<211> 52

<212> PRT

<213> Homo sapiens

<400> 73

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Met Ile Val Ile Ile Leu Leu Phe Tyr Phe Ser Cys Cys Ala Lys Leu
  1             5             10            15

```

```

Asn Asn Ala Val Leu Thr Thr Val Leu Asn Lys Met Ile Asn Asp Arg
      20             25             30

```

```

Met Gly Phe Pro Cys Ala Phe Thr Ser Ser Met Thr Leu Pro Glu Ala
      35             40            45

```

```

Ile Arg Arg Lys
      50

```

<210> 74

<211> 49

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (9)

<400> 74

```

aaattaaana aaaaaaaaaa aaaaaaaaaa aaataaagaa aaaaaaaaaa 49

```

<210> 75

<211> 597

<212> DNA

<213> Homo sapiens

<400> 75

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attaaatcct ggaccagcaa aaggacatta gtgggaaaat tgatgaaatt caaatgagat 180
cttatattga agttaattgt gtcagtgtac atttcctggt ttccataatt gcaagtgtatt 240
atgtaagggt tgtaaatatt aggagcagct gggtaaagggt tatacaaaaa ctctatacta 300
tttttgcatt tttttctgta agtttaaaac attttccaac taaaaagttg aaaacacatg 360
tattagagac acatgcgtat gtgtctctaa taatcttaaa tatattttaag atgatagaag 420
gaattcttga gatagtaaaa tgaagtcacc aaaaaacaaa caaagaaaca aaacgaaatc 480
accaaaatct atcaataaat ttcaggtaat acttttgga gattcattcc tttgagatgg 540
agtctcactc ccagtctggg caacgagcga aactccgtct aaaaaaaaaa aaaaaaa 597

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<210> 76

<211> 89

<212> PRT

<213> Homo sapiens

<400> 76

Met Arg Ser Tyr Ile Glu Val Asn Cys Val Ser Val His Phe Leu Val
 1 5 10 15

Phe Ile Ile Ala Ser Asp Tyr Val Arg Phe Val Asn Ile Arg Ser Ser
 20 25 30

Trp Val Lys Val Ile Gln Lys Leu Tyr Thr Ile Phe Ala Phe Phe Ser
 35 40 45

Val Ser Leu Lys His Phe Pro Thr Lys Lys Leu Lys Thr His Val Leu
 50 55 60

Glu Thr His Ala Tyr Val Ser Leu Ile Ile Leu Asn Ile Phe Lys Met
 65 70 75 80

Ile Glu Gly Ile Leu Glu Ile Val Lys
 85

<210> 77

<211> 1804

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (1794)

<400> 77

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 gtcactttca gatttcaatt tgaggttaag tatataaagc acatcccaat tttatatgct 180
 gccttgagaa aattacagga tgcacggcaa tttgtaggaa tttcaaatgg gatcatttaa 240
 acatttgaaa aattatttta aaaaccatct agtttgcttt tggatttttag acattaaagc 300
 ctatgtgtgc ttgttaacag ggggtggaatg tataaccatc agattcagca tgtgatttca 360
 cctttgaatc tgagtatttc ttcctatct tctttgagtc atttttggag cagactgtca 420
 ccagtattga taactaagca ttaaaggga aagttgcatt gcaactatgc attggtttcc 480
 tggaagaact tttcttttgt tttagtgaat gaagaggctt gatgggatca cttactgtaa 540
 ctcttctac ataaggacce ctcttgcaag cagaacacaa aagaacatgc tcaaggagta 600
 tcccattttc tggataaatt gaagaagttt gctagtaatg tctttatact agcgtcttcc 660
 ttgtatccct ttgctggcaa gggaatacaa ggcgtcaaga ccacagatca aaacacccca 720
 catttgagtg gagtcttatt tttactccaa gagcagttat tcccttctag tctaaaattg 780
 gcagtttttt ctttttttta ataaaatttt taaaatattc ccaaaccagt ggaacacaga 840
 cactggctgc acttagtact gccaaaagcc aaggctcatt gcacatattc catcaacctg 900
 tcgagaatta ggcctcactt tataacccaa ggcagtgaag tgcattgcatt ctcttagctg 960
 ggcaacaat tatactgtag ttgtgataca acacatgttg cttttatttg tactgcacat 1020
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 tatactgttt attgcatatt cttttccctg gaagtgaag agaaatgttt ttcttggtgc 1140
 attgattaca ttttataaat ttgcttagct ggaaagtctg ggaaaagagg cctgtttgtc 1200
 aattgtacaa ccgattgtga agctctagtg tgaatatttt tacgtctgta ttagacattt 1260
 tctttgcaaa tctattgttc gattgaaatg taaatgaaat taaagatggg gtacacccat 1320
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 tcagcttcta tttaaaacta taatttaaaa taattctgta caatgaaatg gggaatatat 1440
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 ttgtgctata ggaataggat taaatggggg aagactagga tttataaggc ctgtatatgg 1560
 ggggagggca gagatggaac aatgaggggt gtgatgatag tgaatagcaa agagtgaatt 1620
 ctgtgtgttt ttgctgtagc actgaagtga agagatatta gctttggctg ttcacaaaat 1680

agagcatcat gattttcagt gtttgagaga aaattgatgg aaaaagtttg cagtacttga 1740
 catgtatttg catgcacaaa ataaaattat ttgtccacct taaaaaaaaa aaanaaaaaa 1800
 aaaa 1804

<210> 78
 <211> 37
 <212> PRT
 <213> Homo sapiens

<400> 78
 Met Lys Arg Leu Asp Gly Ile Thr Tyr Cys Asn Ser Phe Tyr Ile Arg
 1 5 10 15
 Thr Pro Ser Ala Ser Arg Thr Gln Lys Asn Met Leu Lys Glu Tyr Pro
 20 25 30
 Ile Phe Trp Ile Asn
 35

<210> 79
 <211> 360
 <212> DNA
 <213> Homo sapiens

<400> 79
 agaataccaa gactgtgtgt acacgcagat gtcagtgga gagaatgaag atcagcttcg 60
 tgcaagggt tatgacaaaa caccagactt cattttacaa gtaccagttg ctgtagaagg 120
 gcacataatt cactggattg aaagcaaagc ctcatttggg gatgaatgta gccaccacgc 180
 ctacctgcat gaccagtctt ggagctactg gaatagggtc ccaatataac agacaaatgg 240
 tgaaacagag ggatactcac taggaaacag atttggggcca ggcttagtca tctattggt 300
 tggatttatc caggagctgg actgcaaccg ggaaaggggc atcctgctca aagcctgttt 360

<210> 80
 <211> 20
 <212> PRT
 <213> Homo sapiens

<400> 80
 Met Asp Leu Ser Arg Ser Trp Thr Ala Thr Gly Lys Gly Ala Ser Cys
 1 5 10 15
 Ser Lys Pro Val
 20

<210> 81
 <211> 202
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (136)

<220>
 <221> unsure
 <222> (138)

<400> 81

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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 60
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 120
aaaaaaaaa aaaaantnaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 180
aaaaaaaaa aaaaaaaaaa aa                                     202

```

<210> 82
 <211> 1189
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (1155)

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<400> 82
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agtcctgcct gtcaaaagtg gctgtgctat ataratgaac cctcacaggt agcacctctc 120
agagagaata ratggtaaat gtttcttttc aggtctttaa aagtgtcagg ctatcagtta 180
acctctccta gatctcagaa atgcctagaa agagaagtcc tggctacatc aatggaaatt 240
ctccacagat gcaaattttc tctacaaaag atggccttgc agagccacct cagtctgttg 300
tccctgtagc agccatttca aattatgtca aagagatata ttttggggta aaatattttg 360
attatcttca ttagtatatc tcaattttgt caatacaaac ctgagagtta tagtcagagg 420
ttgaattttc atttcaaaat gttttcctag ttttttttct ctttttttgtt ttattgtaag 480
ttgacaattt ataattgtat aaaagtatga ggtacaaagt gatgttatag cttaagaata 540
cagtatggta tgattaaatc aagttattaa cctatccttc acgtcaaagc cttaaatttt 600
ttgatgagaa catattgaaat ttactcttgg aaggtaaaaa aaaatctcag gaccccccaa 660
attaaagcca tgaagctgaa ttgtgcaaca tcctcttcca aatggaagct tgtcttcag 720
gtacagaaca aaaacaagac tcatttcttc acctgcctaa agatgtgcac ataattggct 780
ctccttttac tccctttttc tcttctaaca ttcattatat cttgtgtaaa atgtagattt 840
actggacact aactaaaatt tcacaggggt gtaccatttt gccttactgc ctacctacct 900
gtyttcttac gtaccttytc cccactttaa ggaatgcata catattaaac ctcccaaaaa 960
cytytttaga aaaatagcca caggtttatt tgtggctggg gtgtttccct agatgcacty 1020
taaagctggc ttaataaacc tcagtgtatt aaacttatgc ctcaatcact cattttgggt 1080
gtcactgtct taccaatttg aaatgtaaaa tattytacta ctaattatat ttaccacatt 1140
gtgcaacaga actcnaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1189

```

<210> 83
 <211> 56
 <212> PRT
 <213> Homo sapiens

```

<400> 83
Met Arg Thr Phe Glu Ile Tyr Ser Trp Lys Val Lys Lys Asn Leu Arg
  1              5              10              15

Thr Pro Gln Ile Lys Ala Met Lys Leu Asn Cys Ala Thr Ser Ser Ser
      20              25              30

Lys Trp Lys Leu Val Phe Gln Val Gln Asn Lys Asn Lys Thr His Phe
      35              40              45

Phe Thr Cys Leu Lys Met Cys Thr
      50              55

```

<210> 84
 <211> 525
 <212> DNA
 <213> Homo sapiens

<400> 84

cataacagcg tcagagagaa agaactgact gaaacgtttg agatgaagaa agttctcctc 60
 ctgatcacag ccattcttggc agtggctggt gggtttcccag tctctcaaga ccaggaacga 120
 gaaaaaagaa gtatcagtga cagcgatgaa ttagcttcag gggtttttgt gttcccttac 180
 ccataatccat ttcgcccact tccaccaatt ccatttccaa gatttccatg gtttagacgt 240
 aattttccta ttccaatacc tgaatctgcc cctacaactc cccttcctag cgaaaagtaa 300
 acaagaagga aaagtcacga taaacctggt cacctgaaat tgaaattgag ccacttcctt 360
 gaagaatcaa aattcctggt aataaaagaa aaacaaatgt aattgaaata gcacacagca 420
 ttctctagtc aatatcttta gtgatytyt ttaataaaca tgraagcaaa graaaaaaaaa 480
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 525

<210> 85

<211> 85

<212> PRT

<213> Homo sapiens

<400> 85

Met Lys Lys Val Leu Leu Leu Ile Thr Ala Ile Leu Ala Val Ala Val
 1 5 10 15
 Gly Phe Pro Val Ser Gln Asp Gln Glu Arg Glu Lys Arg Ser Ile Ser
 20 25 30
 Asp Ser Asp Glu Leu Ala Ser Gly Phe Phe Val Phe Pro Tyr Pro Tyr
 35 40 45
 Pro Phe Arg Pro Leu Pro Pro Ile Pro Phe Pro Arg Phe Pro Trp Phe
 50 55 60
 Arg Arg Asn Phe Pro Ile Pro Ile Pro Glu Ser Ala Pro Thr Thr Pro
 65 70 75 80
 Leu Pro Ser Glu Lys
 85

<210> 86

<211> 349

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (9)

<220>

<221> unsure

<222> (159)

<220>

<221> unsure

<222> (188)

<220>

<221> unsure

<222> (230)

<220>

<221> unsure

<222> (232)

<220>

<221> unsure

<222> (270)

<400> 86

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ggtgccgcct ctgcccagcg tttgcttggc tgggctacca cctgcgctcg gacggcgctc 120
ggagggtcct cgcccccggc ctgcctacct gaaaaccana actgatggct ctatttgag 180
tctttcanac aacattcttc ttaacattgc tgccttgag gacttaccan antgaagtct 240
tggctgaacg tttaccattg actcctgttn tcacttaaag tttccacca ttctacgcgt 300
cagagtttgc attacaatg gactgtccac aaccttctt atcatcagg 349

```

<210> 87

<211> 563

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (63)

<220>

<221> unsure

<222> (83)

<220>

<221> unsure

<222> (116)

<220>

<221> unsure

<222> (177)

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<221> unsure

<222> (183)

<220>

<221> unsure

<222> (228)

<220>

<221> unsure

<222> (240)

<400> 87

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gaccccgaaa acaaagaggt tgaggaagaa agaattgcag gcacagaggg tggattnttt 180
ttnttttggg aaccccaacc tggagatgtt atagggttatg ttgtggantg gtgtgaccan 240
accaggatg tgcttcggtg atttccagtg gaagaatgta ggtcccaata ccacaagcac 300
agtcattagc acagatgctt ttaggccagg agttcgatat gacttcagaa tttatgggtt 360
atctacaaaa aggattgctt gtttattaga gaaaaaaaaa aggatactct caggaacttg 420
ctccttcaga caaccctcac gtgctggtgg atacattgac atccactcc ttcactctga 480
gttggaaaga ttactctact gaatctcaac ctggttttat acaagggtac catgtctatc 540
tgaaatccaa ggcgaggcag tgc 563

```

<210> 88

<211> 58

<212> PRT

<213> Homo sapiens

<400> 88

Arg Lys Lys Thr Gly Tyr Ser Gln Glu Leu Ala Pro Ser Asp Asn Pro
 1 5 10 15

His Val Leu Val Asp Thr Leu Thr Ser His Ser Phe Thr Leu Ser Trp
 20 25 30

Lys Asp Tyr Ser Thr Glu Ser Gln Pro Gly Phe Ile Gln Gly Tyr His
 35 40 45

Val Tyr Leu Lys Ser Lys Ala Arg Gln Cys
 50 55

<210> 89

<211> 361

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (102)

<220>

<221> unsure

<222> (105)

<220>

<221> unsure

<222> (153)

<220>

<221> unsure

<222> (186)

<220>

<221> unsure

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<220>

<221> unsure

<222> (252)..(253)

<400> 89

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 ccattcacta gtgctggtga aggccccagt gcnacgttca cgaaggteac gactccgat 180
 gaacantcct ngatgctgat tcatatccta ctgcccattg ttttctgcgt cttgctcatc 240
 atgggtcatgt gnnacttgaa aagtcagtgg atcaaggaga cctgttatcc tgacatccct 300
 gacccttaca agagcagcat cctgtcatta ataaaattca aggtaaaaaa aaaaaaaaaa 360
 a 361

<210> 90

<211> 756

<212> DNA

<213> Homo sapiens

<220>
 <221> unsure
 <222> (37)

<220>
 <221> unsure
 <222> (54)

<220>
 <221> unsure
 <222> (376)

<220>
 <221> unsure
 <222> (433)

<400> 90
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 tgccaatgga aagatcctgt tctataatgt agttgtagaa aacctagaca aaccatccag 180
 ttcagagctc cattccattc cagcaccagc caacagcaca aaactaatcc ttgacaggtg 240
 ttctaccaa atctgcgtca tagccaacaa cagtgtgggt gcttctcctg cttctgtaat 300
 agtcatyctc gcagaccccc aaaacaaaga ggttgaggaa gaaagaattg caggcacaga 360
 ggggtggattt ttttntttt ggaaaccca acctggagat gttataggtt atgttgtgga 420
 ctggtgtgac canacccagg atgtgcctcg gtgatttcca gtggaagaat gtaggtccca 480
 ataccacaag cacagtcatt agcacagatg cttttaggcc aggagttcga tatgacttca 540
 gaatttatgg gttatctaca aaaaggattg cttgtttatt agagaaaaaa aacaggatac 600
 tctcaggaac ttgtccttc agacaaccct cacgtgctgg tggatacatt gacatccac 660
 tccttcactc tgagttggaa agattactct actgaatctc aacctggttt tatacaaggg 720
 taccatgtct atctgaaatc caaggcgagg cagtgc 756

<210> 91
 <211> 58
 <212> PRT
 <213> Homo sapiens

<400> 91
 Arg Lys Lys Thr Gly Tyr Ser Gln Glu Leu Ala Pro Ser Asp Asn Pro
 1 5 10 15
 His Val Leu Val Asp Thr Leu Thr Ser His Ser Phe Thr Leu Ser Trp
 20 25 30
 Lys Asp Tyr Ser Thr Glu Ser Gln Pro Gly Phe Ile Gln Gly Tyr His
 35 40 45
 Val Tyr Leu Lys Ser Lys Ala Arg Gln Cys
 50 55

<210> 92
 <211> 79
 <212> DNA
 <213> Homo sapiens

<400> 92
 tcatttaataa aattcaaggt aaatgttaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 60
 aaaaaaaaaa aaaaaaaaaa 79

<210> 93

<211> 1939

<212> DNA

<213> Homo sapiens

<400> 93

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attggttttc aaatattaaa ccagcatttt attttaaaat aaaccccact tagttatgat 60
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catcatgttc tttttctgaa attttatctt gttctaagt cataaaataa gttggaaatt 180
atcctctcta tctctacttt gtgaaagaat ttatattaca ttggtattat ttcttccttg 240
aatgtttgat agactatact agtgaaagca tctgggccta gggttttctc tgtggaagat 300
tttcagttac aaattcaatt ttactgagtc aggtttgata agttacattt ctcaaggaat 360
ttatctatct aatcattgaa tgtattgaac attcatttgt ttataatttt gttttgttat 420
tgaaaaatgtc tgtaagattt atagtgatgt tccctttctt attcctgaca ttgttaattt 480
gtgtctcttc tccctccatc cctctctcac tctctcttgt cagctgggtc gtgggattat 540
caccttttatt aatcttttca gagaaccact ttttatttct ttgatttcct ttattgtttg 600
ttaagctttt agttttattga ttccctctct tagcttttatt acttccttcc ttctacttag 660
taagagttta atttgcctc attttttttag cttcttaagg taggaaattt gattatattt 720
taaacttaaa aaaacttaaa gctataaaat tccctttaag cactgtttta gctgaattct 780
acataatttg attgggtatg ttttcatcat tcaattaaaa acatagtctt taatttttct 840
ttgcaatttc ttctttaacc cataggttat ttggcagttt gctgctgaat ttcaaagtgc 900
ttgggagggt ttatagctat cttgttaaaa attgatttct aatttaattt tgtcagagaa 960
catactttgt atgacttaaa tcttttaaaa tacgttcaga ctgatttagg gtccagcata 1020
tggtagctct tagtgaaagt aatataatgc attggaaatg atgcacattc tgcaattggt 1080
ggttgtaatg tgctataaat gtcaaccagg ttaacttggt tgatagtatt gttgaattcc 1140
tgtgttccaa atgatatctt ttgtctgttt attctatcaa ttaatgagaa aggtttatta 1200
aaatctccaa ccattgttgt gcatttatct ctatttcttt agttctgttg atttttgttt 1260
tatatatctt gaagctctga gtacatctcc ctgatgagtt gaccctttta tcattatgaa 1320
atgtcattct ttctctgtaa tgcttatctt aaaatctact ttgtttgata tgaatgtagc 1380
cacttaagct ttcttatgca tactgtttgc aaagtgtgtg tgtgtgtgtg tgtgtgtgtg 1440
tgtatctatc tcaatccttt agtttccgcc tatctctgtc tttttattta aagtgtgttt 1500
ttgcaggtag tgtataaact ggatcttgtt tttatattca gcttgacaat ttatgcttct 1560
tgattattgt gtttagttta tttgcatagt gtgtagtcca ttgacatttg gcataatatt 1620
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gttttgttgt tctctgttcc cacacttttt gtcttctttt gggttaatca aatattcttt 1740
ggctttgcat cttatgtctt ctgttggttt tttatctata ccttgctgta tttttcttta 1800
gtggtttctc taggggttac acctacattt attaatcaat catagtccat ttagaattaa 1860
tattgtacac ttacataaaa atgtaaaaca ttgtcacag tataaagtct attccttcca 1920
aaaaaaaaa aaaaaaaaaa

```

1939

<210> 94

<211> 52

<212> PRT

<213> Homo sapiens

<400> 94

```

Met Ser Val Arg Phe Ile Val Met Phe Pro Phe Leu Phe Leu Thr Leu
 1             5             10            15
Leu Ile Cys Val Leu Ser Pro Ser Ile Pro Leu Ser Leu Ser Leu Val
      20             25            30
Ser Trp Ser Val Gly Leu Ser Pro Leu Leu Ile Phe Ser Glu Asn His
      35             40            45
Phe Leu Phe Leu
      50

```

<210> 95

<211> 1252

<212> DNA

<213> Homo sapiens

<400> 95

```

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aacaaggttt atatcaagac tcatggtgaa catgtaggtt ttagaatttt catggatgcc 120
atactacttt ctttgactag aaagggtgaag atgccagatg tggagctctt tgtaatttg 180
ggagactggc ctttggaata aaagaaatcc aattcaaaca tccatccgat cttttcctgg 240
tgtggctcca cagattccaa ggatatcgtg atgcctacgt acgatttgac tgattctgtt 300
ctggaaacca tgggcccggg aagtctggat atgatgtccg tgcaagctaa cacgggtcct 360
ccctgggaaa gcaaaaattc cactgccgtc tggagagggc gagacagccg caaagagaga 420
ctcgagctgg ttaaaactcag tagaaaacac ccagaactca tagacgctgt tttcaccaac 480
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tttgatttct tcaagcataa gtatcaaata aatatcgatg gcaactgtac agcttatcgc 600
ctgccatatt tgctagtggg tgacagtgtt gtgctgaagc aggattccat ctactatgaa 660
catttttaca atgagctgca gccctggaaa cactacattc cagttaagag caacctgagc 720
gatctgctag aaaaacttaa atgggcgaaa gatcacgatg aagaggccaa aaagatagca 780
aaagcaggac aagaatttgc aagaaataat ctcatgggag atgacatatt ctgttattat 840
ttcaaacttt tccaggaata tgccaattta caagtgaagt agccccaaat ccgagagggc 900
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aagaccaaag atgaactctg atatgcaaaa taacttctat tagaataatg gtgctctgaa 1020
gactcttctt aactaaaaag aagaattttt ttaagtatta attccatgga caatataaaa 1080
tctgtgtgat tgtttgcagt atgaagacac atttctactt atgcagtatt ctcatgactg 1140
tactttaaag tacattttta gaattttata ataaaaccac ctttatttta aaggaaaaaa 1200
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<210> 96

<211> 289

<212> PRT

<213> Homo sapiens

<400> 96

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Met Asp Ala Ile Leu Leu Ser Leu Thr Arg Lys Val Lys Met Pro Asp
  1             5             10             15

Val Glu Leu Phe Val Asn Leu Gly Asp Trp Pro Leu Glu Lys Lys Lys
      20             25             30

Ser Asn Ser Asn Ile His Pro Ile Phe Ser Trp Cys Gly Ser Thr Asp
      35             40             45

Ser Lys Asp Ile Val Met Pro Thr Tyr Asp Leu Thr Asp Ser Val Leu
      50             55             60

Glu Thr Met Gly Arg Val Ser Leu Asp Met Met Ser Val Gln Ala Asn
      65             70             75             80

Thr Gly Pro Pro Trp Glu Ser Lys Asn Ser Thr Ala Val Trp Arg Gly
      85             90             95

Arg Asp Ser Arg Lys Glu Arg Leu Glu Leu Val Lys Leu Ser Arg Lys
      100            105            110

His Pro Glu Leu Ile Asp Ala Ala Phe Thr Asn Phe Phe Phe Phe Lys
      115            120            125

His Asp Glu Asn Leu Tyr Gly Pro Ile Val Lys His Ile Ser Phe Phe
      130            135            140

Asp Phe Phe Lys His Lys Tyr Gln Ile Asn Ile Asp Gly Thr Val Ala

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145              150              155              160
Ala Tyr Arg Leu Pro Tyr Leu Leu Val Gly Asp Ser Val Val Leu Lys
              165              170              175
Gln Asp Ser Ile Tyr Tyr Glu His Phe Tyr Asn Glu Leu Gln Pro Trp
              180              185              190
Lys His Tyr Ile Pro Val Lys Ser Asn Leu Ser Asp Leu Leu Glu Lys
              195              200              205
Leu Lys Trp Ala Lys Asp His Asp Glu Glu Ala Lys Lys Ile Ala Lys
              210              215              220
Ala Gly Gln Glu Phe Ala Arg Asn Asn Leu Met Gly Asp Asp Ile Phe
225              230              235              240
Cys Tyr Tyr Phe Lys Leu Phe Gln Glu Tyr Ala Asn Leu Gln Val Ser
              245              250              255
Glu Pro Gln Ile Arg Glu Gly Met Lys Arg Val Glu Pro Gln Thr Glu
              260              265              270
Asp Asp Leu Phe Pro Cys Thr Cys His Arg Lys Lys Thr Lys Asp Glu
              275              280              285

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Leu

<210> 97
 <211> 492
 <212> DNA
 <213> Homo sapiens

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<400> 97
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gttgagagaag aattaattaa tgaatatgct tctaagctgg gagatgatat ttggatcata 180
tatgaacagg tgatgattgc agcactagac tatggctcgg atgacttggc attgttttgt 240
cttcaagagc tgagaagaca gttccctggc agtcacagag tcaagcgatt aacaggcatg 300
agatttgaag ccatggaaaag atatgatgat gctatacagc tatatgatag gattttacaa 360
gaagatccaa ctaacactgc tgcaagaaag cgtaagattg ccattcgaaa agcccagggg 420
aaaaatgtgg aggccattcg ggagctgaat gagtatctgg aacaatttgt tggagaccaa 480
gaagcctggc at 492

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<210> 98
 <211> 159
 <212> PRT
 <213> Homo sapiens

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<400> 98
Met Ala Lys Val Ser Glu Leu Tyr Asp Val Thr Trp Glu Glu Met Arg
  1              5              10              15
Asp Lys Met Arg Lys Trp Arg Glu Glu Asn Ser Arg Asn Ser Glu Gln
              20              25              30
Ile Val Glu Val Gly Glu Glu Leu Ile Asn Glu Tyr Ala Ser Lys Leu
              35              40              45

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Gly Asp Asp Ile Trp Ile Ile Tyr Glu Gln Val Met Ile Ala Ala Leu
 50 55 60
 Asp Tyr Gly Arg Asp Asp Leu Ala Leu Phe Cys Leu Gln Glu Leu Arg
 65 70 75 80
 Arg Gln Phe Pro Gly Ser His Arg Val Lys Arg Leu Thr Gly Met Arg
 85 90 95
 Phe Glu Ala Met Glu Arg Tyr Asp Asp Ala Ile Gln Leu Tyr Asp Arg
 100 105 110
 Ile Leu Gln Glu Asp Pro Thr Asn Thr Ala Ala Arg Lys Arg Lys Ile
 115 120 125
 Ala Ile Arg Lys Ala Gln Gly Lys Asn Val Glu Ala Ile Arg Glu Leu
 130 135 140
 Asn Glu Tyr Leu Glu Gln Phe Val Gly Asp Gln Glu Ala Trp His
 145 150 155

<210> 99
 <211> 85
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (20)

<220>
 <221> unsure
 <222> (27)

<400> 99
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 aaaaaaaaaa aaaaaaaaaa aaaaaa 85

<210> 100
 <211> 313
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (68)

<220>
 <221> unsure
 <222> (108)

<220>
 <221> unsure
 <222> (137)

<220>
 <221> unsure
 <222> (288)

<400> 100
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 tggatttngt aaaggcaaaa acatttcttc ccattggcat acatcccntg tctctgcaca 120
 atccttcttt gaaaatnaat atggtaactt aaatatattt agtacattac gttcctcttg 180
 cttgtatcga catcattcaa aagctcttca aagcatttgt tcaaactctc agtactggcc 240
 agttttcata cagctctcggg gttttaaaac tttgaaatca aggacacnac gtctccagtc 300
 tacctccgag aga 313

<210> 101
 <211> 964
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (395)

<400> 101
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 atggaaaaga aatggttacc atgaaggagc tggagttttc caaagacaaa attctaattg 120
 ggctgaaag aagaagtgtg gaaattgata acaaaaacaa aaccatcaca gcataatcatg 180
 aatctggtca tgccattatt gcatattaca caaaagatgc aatgcctatc aacaaagcta 240
 caatcatgcc acggggggcca acacttggac atgtgtccct gttacctgag aatgacagat 300
 ggaatgaaac tagagcccag ctgcttgacac aaatggatgt tagtatggga ggaagagtgg 360
 cagaggagct tatatttga accgaccata ttacnacagg tgcttccagt gattttgata 420
 atgccactaa aatagcaaaag cggatrgyta ccaaatttgg aatgagtga aagcttggag 480
 ttatgaccta cagtataca ggggaaacta agtccagaaa cccaatctgc catcgaacaa 540
 gaaataagaa tccttctaag ggactcatat gaacgagcaa aacatatctt gaaaactcat 600
 gcaaaggagc ataagaatct cgcagaagct ttattgacct atgagacttt ggatgccaaa 660
 gagattcaaa ttgttctkga ggggaaaaag ttggaagtga gatgataact ctctkgatat 720
 ggatgcttgc tggttttatt gcaagaatat aagtagcatt gcagtagtct acttttacia 780
 cgctttcccc tcattcttga tgtggtgtaa ttgaagggtg tgaaatgctt tgtcaatcat 840
 ttgtcacatt tatccagttt gggttattct cattaggaca cctattgcaa attagcatcc 900
 catggcaaat atattttgaa aaaataaaga actatcagga ttgaaaaaaa aaaaaaaaaa 960
 aaaa 964

<210> 102
 <211> 166
 <212> PRT
 <213> Homo sapiens

<220>
 <221> UNSURE
 <222> (125)..(126)

<400> 102
 Met Val Thr Met Lys Glu Leu Glu Phe Ser Lys Asp Lys Ile Leu Met
 1 5 10 15
 Gly Pro Glu Arg Arg Ser Val Glu Ile Asp Asn Lys Asn Lys Thr Ile
 20 25 30
 Thr Ala Tyr His Glu Ser Gly His Ala Ile Ile Ala Tyr Tyr Thr Lys
 35 40 45
 Asp Ala Met Pro Ile Asn Lys Ala Thr Ile Met Pro Arg Gly Pro Thr
 50 55 60
 Leu Gly His Val Ser Leu Leu Pro Glu Asn Asp Arg Trp Asn Glu Thr

65	70	75	80
Arg Ala Gln Leu Leu Ala Gln Met Asp Val Ser Met Gly Gly Arg Val			
85	90	95	
Ala Glu Glu Leu Ile Phe Gly Thr Asp His Ile Thr Thr Gly Ala Ser			
100	105	110	
Ser Asp Phe Asp Asn Ala Thr Lys Ile Ala Lys Arg Xaa Xaa Thr Lys			
115	120	125	
Phe Gly Met Ser Glu Lys Leu Gly Val Met Thr Tyr Ser Asp Thr Gly			
130	135	140	
Glu Thr Lys Ser Arg Asn Pro Ile Cys His Arg Thr Arg Asn Lys Asn			
145	150	155	160
Pro Ser Lys Gly Leu Ile			
165			

<210> 103
 <211> 1362
 <212> DNA
 <213> Homo sapiens

<400> 103
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 tgaactcatg aatttaaaca tttgatgttg tttcagtcga ttgcagtcac tatccttatt 180
 gattctcaaa gtgttttatt tttgacaaat aagtctctca aattagttag ttattttgat 240
 agtgacctta atagtctttg ctgcttcca tccctgtatg gcataacaaa acattccagg 300
 cccctttagt acatttcttg tcccagacct ggtattagtc atctaactcg gaagccctgc 360
 tttctttctg tgggaaacat tatttcaaga cattagggat aagaatgcca gttgctactg 420
 agttggttat tgtttcaagg atttatcaat acatagagca aataattatg ttttgctttg 480
 tcttattttt atttctttac tttagaaaca gtacagctac ttacaaatca agtttagaac 540
 tctcaggtta tcttaaatct gaagcttcta ccttctaag aacaaaacac cggaatgatg 600
 agatgtcata taaatatcca tttattttat ttcacaatac atacattgac ctattgtatg 660
 tatgattagt acaaatgggt taaattggct tgttgtgtt tgttttgtt ttgcagtttt 720
 tttttgtcat tagattttat ctactagaa atgtatagtc aaatttctgt gttctaaagt 780
 cacttgaagt agtttttctg tttgtagtaa tgttaccagt cggacacatt aggttcattt 840
 atttttggga attgcttttg tcccattta aatttttatt tatcttgcgt atcttggatt 900
 aacggtaata gaccatatac aattttctct acttttttct attkgagagt ttcctcattt 960
 attttgtttt cggatgcaaa gtatttcatt gtatgaatta ccagtttggt caattagttt 1020
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 gtcttatgct tatatgtttt gtggtttctg gcaaggattt caacgtaatt taaggctatc 1140
 ctctacttaa gttatggcca attaagtgtc tgattaaatg tctgtaataa tttaaaaata 1200
 acaatactta atttaaaaga gcttataata cataattatt cattagagag atgcagcaaa 1260
 ccaccatggc aaatgtattc ctatgtaaca aacctgcacg ttcagcaagt gtatcccagc 1320
 actgaaagta aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 1362

<210> 104
 <211> 86
 <212> PRT
 <213> Homo sapiens

<400> 104
 Met Pro Val Ala Thr Glu Leu Val Ile Val Ser Arg Ile Tyr Gln Tyr
 1 5 10 15

Ile Glu Gln Ile Ile Met Phe Cys Phe Val Leu Phe Leu Phe Leu Tyr
 20 25 30
 Phe Arg Asn Ser Thr Ala Thr Tyr Lys Ser Ser Leu Glu Leu Ser Gly
 35 40 45
 Tyr Leu Lys Ser Glu Ala Ser Thr Phe Leu Arg Thr Lys His Arg Asn
 50 55 60
 Asp Glu Met Ser Tyr Lys Tyr Pro Phe Ile Leu Phe His Asn Thr Tyr
 65 70 75 80
 Ile Asp Leu Leu Tyr Val
 85

<210> 105
 <211> 479
 <212> DNA
 <213> Homo sapiens

<400> 105
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 tgggggactc ctcaggacgg actcccttcc agatgcaccc atctccatcc ttctcaactc 120
 cccaaccttt gtcttcccca ctcttcgctc gcgcggcggt ctgagaccac caggaccagt 180
 ttcaggggtt tcctttctcca gcgagacttg gcagaacagg ctttaaaagc aaaggaggca 240
 gcggaagact gtgaattcct ttggacaatt gatgatattt atcattgtgc ccagtttcta 300
 caaataaaaag atgggtggat tattttctcg atggaggaca aaaccttcaa ctgtagaagt 360
 tctagaaagt atagataagg aaattcaagc attggaagaa tttagggaaa aaaaaaaaaa 420
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 479

<210> 106
 <211> 33
 <212> PRT
 <213> Homo sapiens

<400> 106
 Met Gly Gly Leu Phe Ser Arg Trp Arg Thr Lys Pro Ser Thr Val Glu
 1 5 10 15
 Val Leu Glu Ser Ile Asp Lys Glu Ile Gln Ala Leu Glu Glu Phe Arg
 20 25 30

Glu

<210> 107
 <211> 333
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (70)

<220>
 <221> unsure
 <222> (156)

<220>
 <221> unsure
 <222> (184)

<220>
 <221> unsure
 <222> (207)

<220>
 <221> unsure
 <222> (308)

<400> 107
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 agtggagaga ggccactccc tctccagccc ccgatntgga cccgggggag gggaggctga 180
 tgcntttggc cccggcctgg ccaaaanagc ccatccccag ggcagtttca ggtgccggct 240
 gggccctgaa tgtcaaggat aatatatagc ccgctcctgg gtccctggagc tgtggccctt 300
 tgtactcntg ttgtgtccat tgtgtgtgtg cgt 333

<210> 108
 <211> 611
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (62)

<220>
 <221> unsure
 <222> (185)

<220>
 <221> unsure
 <222> (192)

<220>
 <221> unsure
 <222> (249)

<220>
 <221> unsure
 <222> (290)

<400> 108
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 gnaggttttg tgaaggccag gcagggttgg aggccggggg tgtgagagga gaggccata 120
 gggctgagtg gggtcgggtg aggcagaggt cagaaacaga agagctgcag ttgctggagc 180
 tgggntgaga antgggctgc ctctgcat ccccccgtct cctccccttc tccccttggc 240
 gccccctnt gctcagaatc tgaagtagtt ccctcctcag caatttcatn tcttgaacac 300
 tgactcacac cttttaggca cctactgtgt gcatagcatt ccaccaggac tcatctccct 360
 tccttctcag ggggtcccga gcccgcacta gctttgcctt aactccttca tcaaaagacc 420
 cccgcgcagc ttcccacacc tcatacgag ccacatctgc cctattctcc atgctttcca 480
 gcttgctgc ccttctctat ctctcctgc ctgtgcagac ctccaccctt ctttctcca 540
 ccctccatc cccaatgct tgtagacctt ccattcattc cgtctcatcg tgcgtggtct 600
 ctgatcgctc a 611

<210> 109
 <211> 47

<212> PRT
 <213> Homo sapiens

<400> 109
 Met Leu Ser Ser Leu Pro Ala Leu Pro His Leu Ser Leu Pro Val Gln
 1 5 10 15
 Thr Ser Thr Leu Leu Ser Ser Thr Pro Pro Ser Pro Asn Ala Cys Arg
 20 25 30
 Pro Ser Ile His Ser Val Ser Ser Cys Val Val Ser Asp Arg Pro
 35 40 45

<210> 110
 <211> 274
 <212> DNA
 <213> Homo sapiens

<400> 110
 atccaggcg tggggagacc attggcattt gggaaccatt ttccttcgaa cggcttcccc 60
 ttgagctgag cattctgctt gctgcagtag acgggtcgcc ttttgcccat accgaaattt 120
 tctgaaatta aatcgcacac ccccaccatt tcctctcccc tgggatctgg aggaacatca 180
 tacatagtag gtgaatcggt ttgtagagtg aagaatgcta atgtaaagca aatagtcacc 240
 cacgttccct tgtaaattcca aaaaaaaaaa aaaa 274

<210> 111
 <211> 1646
 <212> DNA
 <213> Homo sapiens

<400> 111
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 tattattatt gttgttggtta ctactattat ttttttttac ccaagggaga aagacaaaaa 120
 aacgggtggga tttattttaac atgatcttgg caaacgtctt ctgcctcttc ttctttctag 180
 acgagaccct ccgctctttg gccagccctt cctccctgca gggccccgag ctccacggct 240
 ggcgcccccc agtggactgt gtccgggcca atgagctgtg tgccgccgaa tccaactgca 300
 gctctcgcta ccgcactctg cggcagtgcc tggcaggccg cgaccgcaac accatgctgg 360
 ccaacaagga gtgccaggcg gccttggagg tcttgcaagg gagcccgctg tacgactgcc 420
 gctgcaagcg gggcatgaag aaggagctgc agtgtctgca gatctactgg agcatccacc 480
 tggggctgac cgagggtgag gagtctctacg aagcctcccc ctatgagccg gtgacctccc 540
 gcctctcggga catcttcagg cttgcttcaa tcttctcagg gacaggggca gaccgggtgg 600
 tcagcgccaa gagcaaccat tgcctggatg ctgccaaggc ctgcaacctg aatgacaact 660
 gcaagaagct gcgctcctcc tacatctcca tctgcaaccg cgagatctcg cccaccgagc 720
 gctgcaaccg ccgcaagtgc cacaaggccc tgcgccagtt cttcgaccgg gtgccagcg 780
 agtacaccta ccgcatgtc tctgtctcct gccaaagcca ggcgtgcgct gagcgccgcc 840
 ggcaaaccat cctgcccagc tgctcctatg aggacaagga gaagcccaac tgccctggacc 900
 tgcgtggcgt gtgcgggact gaccacctgt gtcggtcccg gctggccgac ttccatgcca 960
 attgtcgagc ctccctaccag acggtcacca gctgccctgc ggacaattac caggcgtgtc 1020
 tgggctctta tgctggcatg attgggtttg acatgacacc taactatgtg gactccagcc 1080
 cactggcat cgtggtgtcc ccctggtgca gctgtcgtgg cagcgggaac atggaggagg 1140
 agtgtgagaa gttcctcagg gacttcaccg agaaccatg cctccggaac gccatccagg 1200
 cctttggcaa cggcacggag gtgaacgtgt ccccaaaagg cccctcgttc caggccaccc 1260
 agggccctcg ggtggagaag acgccttctt tgccagatga cctcagtgac agtaccagct 1320
 tggggaccag tgatcacc acctgcacct ctgtccagga gcaggggctg aaggccaaca 1380
 actccaaaga gttaagcatg tgcttcacag agctcacgac aaatatcatc ccagggagta 1440
 acaagggtgat caaacctaac tcaggcccca gcagagccag accgtcggct gccttgaccg 1500
 tgctgtctgt cctgatgtg aaacaggcct tgtaggctgt gggaaccgag tcagaagatt 1560
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 acacaccttg caaaaaaaaaa aaaaaa 1646

<210> 112
 <211> 464
 <212> PRT
 <213> Homo sapiens

 <400> 112
 Met Ile Leu Ala Asn Val Phe Cys Leu Phe Phe Phe Leu Asp Glu Thr
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 Leu Arg Ser Leu Ala Ser Pro Ser Ser Leu Gln Gly Pro Glu Leu His
 20 25 30

 Gly Trp Arg Pro Pro Val Asp Cys Val Arg Ala Asn Glu Leu Cys Ala
 35 40 45

 Ala Glu Ser Asn Cys Ser Ser Arg Tyr Arg Thr Leu Arg Gln Cys Leu
 50 55 60

 Ala Gly Arg Asp Arg Asn Thr Met Leu Ala Asn Lys Glu Cys Gln Ala
 65 70 75 80

 Ala Leu Glu Val Leu Gln Glu Ser Pro Leu Tyr Asp Cys Arg Cys Lys
 85 90 95

 Arg Gly Met Lys Lys Glu Leu Gln Cys Leu Gln Ile Tyr Trp Ser Ile
 100 105 110

 His Leu Gly Leu Thr Glu Gly Glu Glu Phe Tyr Glu Ala Ser Pro Tyr
 115 120 125

 Glu Pro Val Thr Ser Arg Leu Ser Asp Ile Phe Arg Leu Ala Ser Ile
 130 135 140

 Phe Ser Gly Thr Gly Ala Asp Pro Val Val Ser Ala Lys Ser Asn His
 145 150 155 160

 Cys Leu Asp Ala Ala Lys Ala Cys Asn Leu Asn Asp Asn Cys Lys Lys
 165 170 175

 Leu Arg Ser Ser Tyr Ile Ser Ile Cys Asn Arg Glu Ile Ser Pro Thr
 180 185 190

 Glu Arg Cys Asn Arg Arg Lys Cys His Lys Ala Leu Arg Gln Phe Phe
 195 200 205

 Asp Arg Val Pro Ser Glu Tyr Thr Tyr Arg Met Leu Phe Cys Ser Cys
 210 215 220

 Gln Asp Gln Ala Cys Ala Glu Arg Arg Arg Gln Thr Ile Leu Pro Ser
 225 230 235 240

 Cys Ser Tyr Glu Asp Lys Glu Lys Pro Asn Cys Leu Asp Leu Arg Gly
 245 250 255

 Val Cys Arg Thr Asp His Leu Cys Arg Ser Arg Leu Ala Asp Phe His
 260 265 270

 Ala Asn Cys Arg Ala Ser Tyr Gln Thr Val Thr Ser Cys Pro Ala Asp
 275 280 285

Asn Tyr Gln Ala Cys Leu Gly Ser Tyr Ala Gly Met Ile Gly Phe Asp
 290 295 300
 Met Thr Pro Asn Tyr Val Asp Ser Ser Pro Thr Gly Ile Val Val Ser
 305 310 315 320
 Pro Trp Cys Ser Cys Arg Gly Ser Gly Asn Met Glu Glu Glu Cys Glu
 325 330 335
 Lys Phe Leu Arg Asp Phe Thr Glu Asn Pro Cys Leu Arg Asn Ala Ile
 340 345 350
 Gln Ala Phe Gly Asn Gly Thr Asp Val Asn Val Ser Pro Lys Gly Pro
 355 360 365
 Ser Phe Gln Ala Thr Gln Ala Pro Arg Val Glu Lys Thr Pro Ser Leu
 370 375 380
 Pro Asp Asp Leu Ser Asp Ser Thr Ser Leu Gly Thr Ser Val Ile Thr
 385 390 395 400
 Thr Cys Thr Ser Val Gln Glu Gln Gly Leu Lys Ala Asn Asn Ser Lys
 405 410 415
 Glu Leu Ser Met Cys Phe Thr Glu Leu Thr Thr Asn Ile Ile Pro Gly
 420 425 430
 Ser Asn Lys Val Ile Lys Pro Asn Ser Gly Pro Ser Arg Ala Arg Pro
 435 440 445
 Ser Ala Ala Leu Thr Val Leu Ser Val Leu Met Leu Lys Gln Ala Leu
 450 455 460

<210> 113
 <211> 355
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (133)

<220>
 <221> unsure
 <222> (151)

<220>
 <221> unsure
 <222> (196)

<220>
 <221> unsure
 <222> (228)

<400> 113
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 atacaacttc cactacataa gatccagaag gtatatcatg aaccacaaaa ctcccatctg 120
 tcttaaggaa acngacgtgc tcttctccgt ntaccagcac tcgggccgcc gagatccagt 180

cctgaggctt caccnttga acaactgcac gccctcaat cttgaagnga tctcctatgc 240
 cgacccact ccctcccgat ccctcagcag cagccccggg cacctccgag ttctggacat 300
 cccccgatag cagcagcagc agcaggacgg gaaagaagcc ccacagagcg gccgc 355

<210> 114

<211> 587

<212> DNA

<213> Homo sapiens

<400> 114

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 ttgtgcttc tgcctaaagt ggtcaacaca agtgatcctg acatgagacg ggaaatggag 120
 cagtcaatga atatgctgaa ttccaacat gagttgcctg atgtttctga gttcatgaca 180
 agactcttct cttcaaaatc atctggcaaa tctagcagcg gcagcagtaa aacaggcaaa 240
 agtggggctg gcaaaaggag gtagtcaggc cgtccaragc tggcatttgc acaaacacgg 300
 caacactggg tggcatccaa gtcttggaac accgtgtgaa gcaactacta taaacttgag 360
 tcatcccgac gttgatctct tacaactgtg tatgttaact ttttagcaca tgttttgtac 420
 ttgggtacacg agaaaaacca gctttcatct ttgtctgtga tgaggccaat attgatgtca 480
 ctgaattaat tacagtgtcc tatagaaaat gccattaata aattatatga actactatac 540
 attatgtata ttaattaaaa catcttaatc cagaaaaaaa aaaaaaa 587

<210> 115

<211> 81

<212> PRT

<213> Homo sapiens

<400> 115

Met	Asn	Pro	Met	Val	Met	Met	Met	Val	Leu	Pro	Leu	Leu	Ile	Phe	Val
1				5					10					15	
Leu	Leu	Pro	Lys	Val	Val	Asn	Thr	Ser	Asp	Pro	Asp	Met	Arg	Arg	Glu
			20					25					30		
Met	Glu	Gln	Ser	Met	Asn	Met	Leu	Asn	Ser	Asn	His	Glu	Leu	Pro	Asp
			35				40					45			
Val	Ser	Glu	Phe	Met	Thr	Arg	Leu	Phe	Ser	Ser	Lys	Ser	Ser	Gly	Lys
			50				55				60				
Ser	Ser	Ser	Gly	Ser	Ser	Lys	Thr	Gly	Lys	Ser	Gly	Ala	Gly	Lys	Arg
65						70				75				80	

Arg

<210> 116

<211> 601

<212> DNA

<213> Homo sapiens

<400> 116

gatgtacctt ggcaccgcgc agcctgcggc ccccaacacc acctcccccg agctcaacct 60
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 gcagtacgtg atcgccctgt tcctctcgtg cctctacacc atcttctctt tccccatcgg 180
 ctttgtgggc aacatcttga tcctgggtgt gaacatcagc ttccgcgaga agatgacct 240
 ccccgacctg tacttcatca acctggcggt ggcggacctc atcctggtgg ccgactccct 300
 cattgaggtg ttcaacctgc acgagcggtg ctacgacatc gccgtctctg gcaccttcat 360
 gtcgctcttc ctgcaggtea acatgtacag cagcgtcttc ttcttccact ggatgagctt 420
 cgaccgctac atcgccctgg ccagggccat gcgctgcagc ctgttccgca ccaagcacca 480

cgccccggctg agctgtggcc tcactctggat ggcatccgtg tcagccacgc tggtgccctt 540
 caccgcccgtg cacctgcagc acaccgacga ggccctgcttc tgtttcgcgg atgtccggga 600
 g 601

<210> 117
 <211> 200
 <212> PRT
 <213> Homo sapiens

<400> 117
 Met Tyr Leu Gly Thr Ala Gln Pro Ala Ala Pro Asn Thr Thr Ser Pro
 1 5 10 15
 Glu Leu Asn Leu Ser His Pro Leu Leu Gly Thr Ala Leu Ala Asn Gly
 20 25 30
 Thr Gly Glu Leu Ser Glu His Gln Gln Tyr Val Ile Gly Leu Phe Leu
 35 40 45
 Ser Cys Leu Tyr Thr Ile Phe Leu Phe Pro Ile Gly Phe Val Gly Asn
 50 55 60
 Ile Leu Ile Leu Val Val Asn Ile Ser Phe Arg Glu Lys Met Thr Ile
 65 70 75 80
 Pro Asp Leu Tyr Phe Ile Asn Leu Ala Val Ala Asp Leu Ile Leu Val
 85 90 95
 Ala Asp Ser Leu Ile Glu Val Phe Asn Leu His Glu Arg Tyr Tyr Asp
 100 105 110
 Ile Ala Val Leu Cys Thr Phe Met Ser Leu Phe Leu Gln Val Asn Met
 115 120 125
 Tyr Ser Ser Val Phe Phe Leu Thr Trp Met Ser Phe Asp Arg Tyr Ile
 130 135 140
 Ala Leu Ala Arg Ala Met Arg Cys Ser Leu Phe Arg Thr Lys His His
 145 150 155 160
 Ala Arg Leu Ser Cys Gly Leu Ile Trp Met Ala Ser Val Ser Ala Thr
 165 170 175
 Leu Val Pro Phe Thr Ala Val His Leu Gln His Thr Asp Glu Ala Cys
 180 185 190
 Phe Cys Phe Ala Asp Val Arg Glu
 195 200

<210> 118
 <211> 419
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (80)
 <220>

<221> unsure

<222> (178)

<400> 118

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acgectgagc gtcctccatc ttccaggatg gcagcaatgg cgctgtgagg cctcaccagg 60
cccacgagga gcagcagcgn tcggcccggg gcagcaggaa ggcccttttg tggagcgccc 120
gccgtctgct ccgggggtgtt tcagtcactg cttgttgaca tcaacatggc aattgcantc 180
atgtggactg ggaccgtgag agctgccgtg tgggttagtc gggtgccagg acaatgaaat 240
actccagcac gtgtgggtga cgaatttggt ttacagaaa taacagctgg ggacaactgc 300
ggatgatgat taaaaacctt cccataaaat gtaagaaaag ctgatgaggc tggtgacgtt 360
cagcctttgt caataaacct gtcattgtgc gaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 419

```

<210> 119

<211> 714

<212> DNA

<213> Homo sapiens .

<220>

<221> unsure

<222> (646)

<220>

<221> unsure

<222> (649)

<400> 119

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agccattggg acaggaaatg ccaacaaca cccagataag gttgctgaag ccataattga 60
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tatctttctg cctcaagtac tggatgtgtt ttatgccaac atgaagaaaa gagaagggac 180
tcagctttct tcccaacagy ctartswtsy ytwmyttky akcatttttg ggcttttcaa 240
agcaatctcc ccaaaaaaag aatcatttgg ttttgaaaa gaaaacagaa tcagcaactt 300
ttcgggtgtg tggtgaaaat gtcacgtgtg tggaaatcgc tatctcctgg ctacaagacc 360
tgattgaaaa agaacagtgt cttacacca gtgaagatga gtgcatcaa gacttttgatg 420
aaaaggagta tcaggagtgt aatgagctgc agaagaagtt aaatattaac atttccttg 480
accataagag acctttgatt aagggttttg gaattagcag agatgtgatg caggctagag 540
atgaaattga ggcgatgatc aagagagttc gattggccaa agaacaggaa tcccgggcag 600
attgtatcag tgagtttata gaatggcagt ataatgacaa taacantntt cattgtttta 660
acaaatgac caatctgaaa ttagaggatg caaggagaga aaaaaaaaaa aaaa 714

```

<210> 120

<211> 159

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (141)..(142)

<400> 120

```

Phe Leu Gly Phe Ser Lys Gln Ser Pro Gln Lys Lys Asn His Leu Val
  1                      5                      10                     15

Leu Glu Lys Lys Thr Glu Ser Ala Thr Phe Arg Val Cys Gly Glu Asn
                20                      25                     30

Val Thr Cys Val Glu Tyr Ala Ile Ser Trp Leu Gln Asp Leu Ile Glu
                35                      40                     45

Lys Glu Gln Cys Pro Tyr Thr Ser Glu Asp Glu Cys Ile Lys Asp Phe
                50                      55                     60

```

Asp Glu Lys Glu Tyr Gln Glu Leu Asn Glu Leu Gln Lys Lys Leu Asn
 65 70 75 80
 Ile Asn Ile Ser Leu Asp His Lys Arg Pro Leu Ile Lys Val Leu Gly
 85 90 95
 Ile Ser Arg Asp Val Met Gln Ala Arg Asp Glu Ile Glu Ala Met Ile
 100 105 110
 Lys Arg Val Arg Leu Ala Lys Glu Gln Glu Ser Arg Ala Asp Cys Ile
 115 120 125
 Ser Glu Phe Ile Glu Trp Gln Tyr Asn Asp Asn Asn Xaa Xaa His Cys
 130 135 140
 Phe Asn Lys Met Thr Asn Leu Lys Leu Glu Asp Ala Arg Arg Glu
 145 150 155

<210> 121
 <211> 2681
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (2656)

<400> 121
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 tcttccctac cttatcatte cttgtgcttc tccacaagcc cactcttccc ctctcatcata 120
 catgtgccga cctttcctgt ctcttttact ttgcagcacc aaatgcttcc tactttgtgg 180
 tctaggagga acacatgtca cttttgtaag ctgctcgaaa gcaggggcca cacttctatc 240
 cttgttttcc acacaacacc aagcacttag tagacacca ataaatcatt gctgaatgaa 300
 tgtattcagc ctggaattgc actaggattt tttggccaac acattgtatt ctaactgat 360
 accagacttc caatcaaata aaatccttaa gcctttttca tagtctttaa ttaactact 420
 tctcttccat tatttccctt tgctactttt tgaactgata ttcagaactt ttctgttaat 480
 gtttaatttt catccattat tcttgtctgt acagatcttt ttgatttttg actctcttat 540
 ctagtttttt tttttttttt ttggcttccc gttgtgttat ccacaggcac aatgggtata 600
 ttgactatcg ttcattgaag ttgttgatac aaatgttgaa caggagaaaa accagtagct 660
 tgccaacttg gcacctcatt ctctagcttg acagtaatct ctatctagt agtttttaga 720
 tatggttatt taatcaaata tctactagct ctaattttgt tataattcat tcatgtatac 780
 agacaatgaa gaatcatctt tcttcattea acacatttat tgggaacca tcattgtcca 840
 aggcaatatg ctaggcattg tgtaatagaa agcgattaa cttttacccc tgctctcttt 900
 ggcttgcaaa gagcaggtaa gattcatgca cagacaaatg tagtaccagg taaatagtga 960
 ggccaaacac aagaggcagg tcaaagggtt ttggattcag aggatggaga agctctttct 1020
 aggctgggtg aatatttgca gaatgagtag gctcataagt ggagggtagg tacaggctaa 1080
 gctgctgtaa gaaagagtcc aaaatgcaaa ggatttacca caatgcagtt aatttttctc 1140
 acaacggtcg aggtaggcag gtggtccaag tccagttaat cagccctcct caacacaagg 1200
 cttccctctg taagctcagg atgaccgctc cagttctcat catctcccag gcagaaaaac 1260
 gggagaaaga gaactagacg taccaccag tcatttttaag gacatagcca ggccagggtg 1320
 agtgactcac atctgtaac caagcacttt gggaggctcg aggctggagg atagcttgaa 1380
 gccaggagtt tgagaccagc ttggataaga aagcaagacc ttgtctctac aaaaaattta 1440
 aaaattaacc atgtgtgtgt gtgtgcacct atagtcccag ctactcagga ggctgagggtg 1500
 gaaggatcac ttgagcacag gagttggagg atacagtgag ccatgatcac accacctcac 1560
 tccagccttg gcaacatagt gagaccccat ctctttaaaa aacaaaacaa aaaaacatca 1620
 ccaggaagtt gcttacatgt cttctattec tataacatcg gcctgagctt agtcacatgg 1680
 ccacaccag cagaaagaac tctaggaat atggtcttat gctaggtaac cccaaacca 1740
 gctaaaactg ttgcttttga agaagggtga aacagacaat gtggaggaga attaccagtc 1800

```

tgccacaaaag agaagaatt ctatgtgagg aaaacgctct agaagagggg gctgattaat 1860
tagttatatc tcagccgaga ggatgttatg agaacacag atttgggttt aatagaaaaa 1920
cttagaacc cttcaagaagg aatgggcgga cttgagagtg tcctccgctt ctgaaaaatga 1980
tcaagaaaaa tggtaagaat gtacacctca aggggtggatg gtaaagggtca gcctttaagc 2040
ctcaatggcg gtgtggttgt aggtggggtg ggggtggagg ccccgagac aggcagacta 2100
ccacagtagc cccgatggaa gcagtggaa tgaactggaa ggagcggctg tgggagcgac 2160
aacgtgatga gaataaaccc ggcttggctc tgccctgtgc acacacaggt gagctgtgtg 2220
ctccggatg tgcagctgg tatatgcgtc tgcagaagg cagctgggga gcactgttag 2280
ctcagagact aagaggcaga cccaggaagc ccttcttgc attggtcagg gtttgcgtca 2340
ttttcccaag cccaggaat ggaaccagt tcttcttctt tctgtgtaaa ataataagca 2400
tcacaatagg ctgtgctcat gagaacgcat ttgtttcca cagaaatgtt ttttctcact 2460
ctgtcctgat ttgtattct gttaaactca gtaaacacat taccaaattt taaaataagg 2520
tgacttggtt tccccactc acagttcacc aaaggattt catctgtttg ttctgaaaat 2580
gcagctgctg tctagattta tgtgtgctc gacaagaaat gttttgtgta acaataaaaa 2640
tcatttcctt tgatgnaaaa aaaaaaaaaa aaaaaaaaaa a 2681

```

<210> 122

<211> 132

<212> PRT

<213> Homo sapiens

<400> 122

```

Met Glu Ala Val Arg Met Asn Trp Lys Glu Arg Leu Trp Glu Arg Gln
  1             5             10             15

```

```

Arg Asp Glu Asn Lys Pro Gly Leu Ala Leu Pro Cys Ala His Thr Gly
          20             25             30

```

```

Glu Leu Cys Ala Pro Gly Cys Val Ser Trp Tyr Met Arg Leu Ser Glu
          35             40             45

```

```

Gly Ser Trp Gly Ala Leu Leu Ala Gln Arg Leu Arg Gly Arg Pro Arg
          50             55             60

```

```

Lys Pro Phe Phe Ala Leu Val Arg Val Cys Cys Ile Phe Pro Ser Pro
          65             70             75             80

```

```

Gly Asn Gly Thr Gln Phe Phe Phe Phe Leu Cys Lys Ile Ile Ser Ile
          85             90             95

```

```

Thr Ile Gly Cys Ala His Glu Asn Ala Phe Cys Phe His Arg Asn Val
          100            105            110

```

```

Phe Ser His Ser Val Leu Ile Leu Ile Ser Val Lys Leu Ser Lys His
          115            120            125

```

```

Ile Thr Lys Phe
          130

```

<210> 123

<211> 1585

<212> DNA

<213> Homo sapiens

<400> 123

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ctaagctatt tgattctagg tctagaatgt tatctcttat tagaggatat gttaattttc 60
ctgcatttta ttcatattt aacttaacat ctctgattgc ctaccatgtg tcaggctctg 120
tactaaggat tgaggacca aagatgaaca aaacatgggg cctaattcaa agatttcaca 180
atctggagag aaagtcagcc acatacaaaa aattataagg tagaatgtgc tataaaaaat 240

```

```

gatttaggta cagtgaaggt ttgaaaggc ttactaaag atgtcgtatt tgaattgggt 300
ctgagcatga attagtcttc aggtgagga gggggttaaa gaaaactcta atgaaggaaac 360
tctagtatgt gtgaaggcaa ggagctggt gtgttttaggt tgcagcaaac caagtacaac 420
caggcttga cttgagtgac tggaaagaca ggaagatgcc atgtcgagaa aaactgcccc 480
tgccaagctg agaaatgttc agcagaaaca taagggtgagc tgcataatgtc atttaaaatg 540
ttctaggagc cacatttttta aaaaatcaaa attaacaagt caaaaaataa aaagcaatgg 600
ggggagatta aatgcatatt actaagtga agaagccaat caaaaaaggc tacatacctg 660
tatgattcca actataatgac attctgaaaa aggccaaact atagagacag taaatgatca 720
gtggttgcca ggagttaggg aggagggagg gatgaacagg cagagcacag aagattttta 780
gagcagtaga actattttgt atgatattat aatattgtag atacatatca ttataaattt 840
gtccaaaccc atagaatgta caccaagagt gaactccta gtaactctgt gactttgggt 900
gataatgatg tgtcagtgta gattgatcag ttgtaacaaa tgtaccattc tgggtgggaa 960
tggtgataat ggagtaggct atgcatgtgt ggggcagtggt gtatatggga aatatctata 1020
ccttctggtc agttttgctg tgaacttgat ctaaaaata gcctactaag aaacacaagt 1080
caaattaatt ttaataatac attttattta acccaattta tcagaaatac taatatttta 1140
acatgtaatt gatataaaag ttattaacta gatattttac tttttttggt actgagtctt 1200
tgaaatctgg tctgtatttt acatttacag tacatctcaa ttcacattag ccacatttca 1260
gatactcagt acatacatga gtacctatgg ctagtggctg ctgtgttgga cagggcaggt 1320
cttgaaacct ggacttgctt gactcagaag cctcaattct cagccacagt gatatcctgc 1380
tccttaagta ctataatgat aaacacaaga ggagaggagc tttcagatga tcacttaac 1440
ccatgacggt agctgtgtct ctccacactg cccggtggct ccagtctgaa gcacttaggc 1500
agtgtgttcc aacagaaata caatgagagc caatacgtga taagtgtcct atgggccaca 1560
ttgaaacagt aaaaaaaaaa aaaaaa 1585

```

<210> 124

<211> 63

<212> PRT

<213> Homo sapiens

<400> 124

```

Met Leu Ser Leu Ile Arg Gly Tyr Val Asn Phe Pro Ala Phe Tyr Ser
  1             5             10             15

Phe Ile Asn Leu Thr Ser Leu Ile Ala Tyr His Val Ser Gly Ser Val
          20             25             30

Leu Arg Ile Glu Asp Pro Lys Met Asn Lys Thr Trp Gly Leu Ile Gin
          35             40             45

Arg Phe His Asn Leu Glu Arg Lys Ser Ala Thr Tyr Lys Lys Leu
          50             55             60

```

<210> 125

<211> 625

<212> DNA

<213> Homo sapiens

<400> 125

```

gatccccacca gttctgcctg gttcctcca tccccagagg cactaaaagc agtattttta 60
ggttgggtgtc ttactccctg gaagcctgaa atgggtggaa tagcggttaag gcttgagtaa 120
aactagggga cagaggttct tatttgcga ttttatttta taatttgacc acagcatctg 180
aactccctct ctccctggaa taagtatttt tcccacattt ttggatata gtatggtaga 240
caattttttt ttaagacaca gagataaatg ttttctgct ttggttacct ttcctttccc 300
ctttaaaagg aattagctat agaactgctt tgtaaagatg cttcttgata ttttactttt 360
gttccctttc cctaatacatt cccttttctc cccactcctc cagaaggcat aacccttctc 420
tccacacccc ctacccccac ccccgctcta ggctcccatc ctttccatca agaccttcat 480
tagcttatga tatttgcctg cgagatgtta taacaaggac tcgttcatgt atataagcta 540
tttcttgatc catttaaaag gaattgtaca ttgtgtagga aaaaaaaaaa aaaaaaaaaa 600
aaaaaaaaaa aaaaaaaaaa aaaaaa 625

```

<210> 126
 <211> 24
 <212> PRT
 <213> Homo sapiens

<400> 126
 Met Leu Leu Asp Ile Leu Leu Leu Phe Leu Phe Pro Asn His Ser Leu
 1 5 10 15
 Phe Ser Pro Leu Leu Gln Lys Ala
 20

<210> 127
 <211> 1946
 <212> DNA
 <213> Homo sapiens

<400> 127
 gaagctgggg cccagcggag gtagcagcag acgcctgaga gcgaggccga ggccccctcag 60
 ggtttggaga ccctgacaca cccaccttct cacctgggct ctgcgtatcc cccagccttg 120
 agggaaagatg aagcctaaac tgatgtacca ggagctgaag gtgcctgcag aggagcccg 180
 caatgagctg cccatgaatg agattgaggc gtggaaggct gcggaagaaga aagcccgctg 240
 ggtcctgctg gtccctcattc tggcggttgt gggcttcgga gccctgatga ctcagctgtt 300
 tctatgggaa tacggcgact tgcattcttt tgggccccaa cagcgccccag ccccttgcta 360
 tgacccttgc gaarcagtgc tgggtgaaaag cattcctgar ggcttggaact tccccaatgc 420
 ctccacgggg aacctttcca ccagccaggc ctggctgggc ctgctcgccg gtgcgcacag 480
 cagcctggac atcgctcctt tctactggac cctcaccaac aatgacaccc acacgcagga 540
 gccctctgcc cagcagggtg aggaggtcct ccggcagctg cagaccctgg caccaaagg 600
 cgtgaacgtc cgcctcgctg tgagcaagcc cagcggggcc cagccacagg cggacctgca 660
 ggctctgctg cagagcgggtg cccaggtccg catggtggac atgcagaagc tgaccatgg 720
 cgtcctgcat accaagtctt ggggtgggga ccagaccac ttctacctgg gcagtgccaa 780
 catggactgg cgttcaactga cccaggtcaa ggagctgggc gtggctcatgt acaactgcag 840
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 cagctccatc ccatcaactt ggccccggtt ctatgacacc cgctacaacc aagagacacc 960
 aatggagatc tgctcaatg gaacccctgc tctggcctac ctggcgagtg cgcctccacc 1020
 cctgtgtcca agtggccgca ctccagacct gaaggctcta ctcaacgtgg tggacaatgc 1080
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 caaggtgctg ctgctcatca gctgctgggg aactcggag ccacccatgc gggccttctt 1260
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 tgtggtcccc gcggatgagg cccaggctcg aatcccatat gccctgttca accacaacaa 1380
 gtacatgggt actgaacgca ccacctacat cggaaacctc aactgggtctg gcaactactt 1440
 cacggagacg gcgggcacct cgtgctggt gacgcagaat gggaggggag ccctgcggag 1500
 ccagctggag gccattttcc tgagggaactg ggactccctt tacagccatg accttgacac 1560
 ytcagytgac agsgtgggca acgcctgccg cytgytctga ggcccgatcc agtgggcagg 1620
 ccaaggcctg ctggggcccc gcggaccag gtgytctggg tcacgggtccc tgtccccgca 1680
 cccccgytty tgytgcccc attgtggctc ctcaggtyt ytccccctgt cccccaccty 1740
 tacctccacc cccaccggcc tgacgtgtg gccccgggac ccagcagagc tgggggaggg 1800
 atcagccccc aaagaaatgg ggggtcatgc tgggcctggc cccctggccc accccaytt 1860
 ttcagggcaa aaagggccca gggttataat aagtaaataa cttgtctgta aaaaaaaaaa 1920
 aaaaaaaaaa aaaaaaaaaa aaaaaa 1946

<210> 128
 <211> 490
 <212> PRT
 <213> Homo sapiens

<220>

<221> UNSURE

<222> (83)

<220>

<221> UNSURE

<222> (480)

<220>

<221> UNSURE

<222> (482)

<220>

<221> UNSURE

<222> (490)

<400> 128

Met Lys Pro Lys Leu Met Tyr Gln Glu Leu Lys Val Pro Ala Glu Glu
 1 5 10 15

Pro Ala Asn Glu Leu Pro Met Asn Glu Ile Glu Ala Trp Lys Ala Ala
 20 25 30

Glu Lys Lys Ala Arg Trp Val Leu Leu Val Leu Ile Leu Ala Val Val
 35 40 45

Gly Phe Gly Ala Leu Met Thr Gln Leu Phe Leu Trp Glu Tyr Gly Asp
 50 55 60

Leu His Leu Phe Gly Pro Asn Gln Arg Pro Ala Pro Cys Tyr Asp Pro
 65 70 75 80

Cys Glu Xaa Val Leu Val Glu Ser Ile Pro Glu Gly Leu Asp Phe Pro
 85 90 95

Asn Ala Ser Thr Gly Asn Pro Ser Thr Ser Gln Ala Trp Leu Gly Leu
 100 105 110

Leu Ala Gly Ala His Ser Ser Leu Asp Ile Ala Ser Phe Tyr Trp Thr
 115 120 125

Leu Thr Asn Asn Asp Thr His Thr Gln Glu Pro Ser Ala Gln Gln Gly
 130 135 140

Glu Glu Val Leu Arg Gln Leu Gln Thr Leu Ala Pro Lys Gly Val Asn
 145 150 155 160

Val Arg Ile Ala Val Ser Lys Pro Ser Gly Pro Gln Pro Gln Ala Asp
 165 170 175

Leu Gln Ala Leu Leu Gln Ser Gly Ala Gln Val Arg Met Val Asp Met
 180 185 190

Gln Lys Leu Thr His Gly Val Leu His Thr Lys Phe Trp Val Val Asp
 195 200 205

Gln Thr His Phe Tyr Leu Gly Ser Ala Asn Met Asp Trp Arg Ser Leu
 210 215 220

Thr Gln Val Lys Glu Leu Gly Val Val Met Tyr Asn Cys Ser Cys Leu
 225 230 235 240

Ala Arg Asp Leu Thr Lys Ile Phe Glu Ala Tyr Trp Phe Leu Gly Gln
245 250 255

Ala Gly Ser Ser Ile Pro Ser Thr Trp Pro Arg Phe Tyr Asp Thr Arg
260 265 270

Tyr Asn Gln Glu Thr Pro Met Glu Ile Cys Leu Asn Gly Thr Pro Ala
275 280 285

Leu Ala Tyr Leu Ala Ser Ala Pro Pro Pro Leu Cys Pro Ser Gly Arg
290 295 300

Thr Pro Asp Leu Lys Ala Leu Leu Asn Val Val Asp Asn Ala Arg Ser
305 310 315 320

Phe Ile Tyr Val Ala Val Met Asn Tyr Leu Pro Thr Leu Glu Phe Ser
325 330 335

His Pro His Arg Phe Trp Pro Ala Ile Asp Asp Gly Leu Arg Arg Ala
340 345 350

Thr Tyr Glu Arg Gly Val Lys Val Arg Leu Leu Ile Ser Cys Trp Gly
355 360 365

His Ser Glu Pro Ser Met Arg Ala Phe Leu Leu Ser Leu Ala Ala Leu
370 375 380

Arg Asp Asn His Thr His Ser Asp Ile Gln Val Lys Leu Phe Val Val
385 390 395 400

Pro Ala Asp Glu Ala Gln Ala Arg Ile Pro Tyr Ala Arg Val Asn His
405 410 415

Asn Lys Tyr Met Val Thr Glu Arg Ala Thr Tyr Ile Gly Thr Ser Asn
420 425 430

Trp Ser Gly Asn Tyr Phe Thr Glu Thr Ala Gly Thr Ser Leu Leu Val
435 440 445

Thr Gln Asn Gly Arg Gly Gly Leu Arg Ser Gln Leu Glu Ala Ile Phe
450 455 460

Leu Arg Asp Trp Asp Ser Pro Tyr Ser His Asp Leu Asp Thr Ser Xaa
465 470 475 480

Asp Xaa Val Gly Asn Ala Cys Arg Leu Xaa
485 490

<210> 129

<211> 6254

<212> DNA

<213> Homo sapiens

<400> 129

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<212> PRT

<213> Homo sapiens

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<210> 132

<211> 479

<212> PRT

<213> Homo sapiens

<220>

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<222> (13)..(14)

<220>

<221> UNSURE

<222> (21)

<400> 132

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Leu Phe Gln Met Xaa Gln Ala Pro Val Leu Glu Gly Arg Cys Pro Pro
          20           25           30

Pro Met Val Gly His Arg Ala Ser Gln Thr Gln Thr Ala Pro Val Glu
          35           40           45

Glu Ser Asp Phe Asp Thr Met Pro Asp Ile Glu Ser Asp Lys Asn Ile
          50           55           60

Ile Arg Thr Lys Met Phe Leu Tyr Leu Ser Asp Leu Ser Arg Lys Asp
          65           70           75           80

Arg Arg Ile Val Ser Lys Lys Tyr Lys Ile Tyr Phe Trp Asn Ile Ile
          85           90           95

Thr Ile Ala Val Phe Tyr Ala Leu Pro Val Ile Gln Leu Val Ile Thr
          100          105          110

Tyr Gln Thr Val Val Asn Val Thr Gly Asn Gln Asp Ile Cys Tyr Tyr
          115          120          125

Asn Phe Leu Cys Ala His Pro Leu Gly Val Leu Ser Ala Phe Asn Asn
          130          135          140

Ile Leu Ser Asn Leu Gly His Val Leu Leu Gly Phe Leu Phe Leu Leu
          145          150          155          160

Ile Val Leu Arg Arg Asp Ile Leu His Arg Arg Ala Leu Glu Ala Lys
          165          170          175

Asp Ile Phe Ala Val Glu Tyr Gly Ile Pro Lys His Phe Gly Leu Phe
          180          185          190

Tyr Ala Met Gly Ile Ala Leu Met Met Glu Gly Val Leu Ser Ala Cys
          195          200          205

Tyr His Val Cys Pro Asn Tyr Ser Asn Phe Gln Phe Asp Thr Ser Phe
          210          215          220

Met Tyr Met Ile Ala Gly Leu Cys Met Leu Lys Leu Tyr Gln Thr Arg
          225          230          235          240

His Pro Asp Ile Asn Ala Ser Ala Tyr Ser Ala Tyr Ala Ser Phe Ala
          245          250          255

Val Val Ile Met Val Thr Val Leu Gly Val Val Phe Gly Lys Asn Asp
          260          265          270

Val Trp Phe Trp Val Ile Phe Ser Ala Ile His Val Leu Ala Ser Leu
          275          280          285

```

Ala Leu Ser Thr Gln Ile Tyr Tyr Met Gly Arg Phe Lys Ile Asp Val
 290 295 300

Ser Asp Thr Asp Leu Gly Ile Phe Arg Arg Ala Ala Met Val Phe Tyr
 305 310 315 320

Thr Asp Cys Ile Gln Gln Cys Ser Arg Pro Leu Tyr Met Asp Arg Met
 325 330 335

Val Leu Leu Val Val Gly Asn Leu Val Asn Trp Ser Phe Ala Leu Phe
 340 345 350

Gly Leu Ile Tyr Arg Pro Arg Asp Phe Ala Ser Tyr Met Leu Gly Ile
 355 360 365

Phe Ile Cys Asn Leu Leu Leu Tyr Leu Ala Phe Tyr Ile Ile Met Lys
 370 375 380

Leu Arg Ser Ser Glu Lys Val Leu Pro Val Pro Leu Phe Cys Ile Val
 385 390 395 400

Ala Thr Ala Val Met Trp Ala Ala Ala Leu Tyr Phe Phe Phe Gln Asn
 405 410 415

Leu Ser Ser Trp Glu Gly Thr Pro Ala Glu Ser Arg Glu Lys Asn Arg
 420 425 430

Glu Cys Ile Leu Leu Asp Phe Phe Asp Asp His Asp Ile Trp His Phe
 435 440 445

Leu Ser Ala Thr Ala Leu Phe Phe Ser Phe Leu Val Leu Leu Thr Leu
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Asp Asp Asp Leu Asp Val Val Arg Arg Asp Gln Ile Pro Val Phe
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<210> 133

<211> 462

<212> DNA

<213> Homo sapiens

<400> 133

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 aatctagatg ctattcttgg tgatctgact agttctgact ttacaataa ttccatatcc 180
 tcaaatggta gtcactctgg gactaagcaa cagggtgttc aaggaactaa ttctctgggt 240
 ttgaaaagtt cacagtctgt gcagtctatt cgtcctccat ataaccgagc agtgtctctg 300
 gatagccctg tttctgttgg ctcaagtcct ccagtaaaaa atatcagtgc tttccccatg 360
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<210> 134

<211> 147

<212> PRT

<213> Homo sapiens

<400> 134

Met Ser Gln Cys Thr Ser Ser Thr Ile Pro Ser Ser Ser Gln Glu Lys
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Asp Pro Lys Ile Lys Thr Glu Thr Ser Glu Glu Gly Ser Gly Asp Leu
 20 25 30
 Asp Asn Leu Asp Ala Ile Leu Gly Asp Leu Thr Ser Ser Asp Phe Tyr
 35 40 45
 Asn Asn Ser Ile Ser Ser Asn Gly Ser His Leu Gly Thr Lys Gln Gln
 50 55 60
 Val Phe Gln Gly Thr Asn Ser Leu Gly Leu Lys Ser Ser Gln Ser Val
 65 70 75 80
 Gln Ser Ile Arg Pro Pro Tyr Asn Arg Ala Val Ser Leu Asp Ser Pro
 85 90 95
 Val Ser Val Gly Ser Ser Pro Pro Val Lys Asn Ile Ser Ala Phe Pro
 100 105 110
 Met Leu Pro Lys Gln Pro Met Leu Gly Gly Asn Pro Arg Met Met Asp
 115 120 125
 Ser Gln Glu Asn Tyr Gly Ser Ser Met Gly Asp Trp Gly Leu Pro Asn
 130 135 140
 Ser Lys Ala
 145

<210> 135
 <211> 119
 <212> DNA
 <213> Homo sapiens

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 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 119

<210> 136
 <211> 3316
 <212> DNA
 <213> Homo sapiens

<400> 136
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 cagctgaagc catatcatgc tcataaagag gaaatgataa aaattaacaa gggtaaacga 240
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 acgtcatccc acaattcttc tgatgacaag aatcgacgta attccagtga ggagagaagt 360
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 aaggatctca ccatcccga gtctagtacc gtgaaggga tgatggccgg accgatggcc 600
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 catttctctc taagccaaac agagaagcca gctgtctgtt accaggcaat cacgaagaag 720
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 gtgaatggca gcatcacacc cacagacaaa aagataggat ttttgggcct tggctctcatg 840
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 actgcagaga aagagggggc cgtctggga agaaccctcg ctgaagtctg ctcaacctgc 960

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agtgggtgtgc tgcaagggat ccgcctctggg aagtgtctacg tggacatgtc aacagtggac 1080
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<210> 137

<211> 547

<212> PRT

<213> Homo sapiens

<400> 137

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Met Ala Ala Val Ser Leu Arg Leu Gly Asp Leu Val Trp Gly Lys Leu
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Gly Arg Tyr Pro Pro Trp Pro Gly Lys Ile Val Asn Pro Pro Lys Asp
  20             25            30

```

```

Leu Lys Lys Pro Arg Gly Lys Lys Cys Phe Phe Val Lys Phe Phe Gly
  35             40            45

```

```

Thr Glu Asp His Ala Trp Ile Lys Val Glu Gln Leu Lys Pro Tyr His
  50             55            60

```

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Ala His Lys Glu Glu Met Ile Lys Ile Asn Lys Gly Lys Arg Phe Gln

```

65	70	75	80
Gln Ala Val Asp Ala Val Glu Glu Phe Leu Arg Arg Ala Lys Gly Lys	85	90	95
Asp Gln Thr Ser Ser His Asn Ser Ser Asp Asp Lys Asn Arg Arg Asn	100	105	110
Ser Ser Glu Glu Arg Ser Arg Pro Asn Ser Gly Asp Glu Lys Arg Lys	115	120	125
Leu Ser Leu Ser Glu Gly Lys Val Lys Lys Asn Met Gly Glu Gly Lys	130	135	140
Lys Arg Val Ser Ser Gly Ser Ser Glu Arg Gly Ser Lys Ser Pro Leu	145	150	155
Lys Arg Ala Gln Glu Gln Ser Pro Arg Lys Arg Gly Arg Pro Pro Lys	165	170	175
Asp Glu Lys Asp Leu Thr Ile Pro Glu Ser Ser Thr Val Lys Gly Met	180	185	190
Met Ala Gly Pro Met Ala Ala Phe Lys Trp Gln Pro Thr Ala Ser Glu	195	200	205
Pro Val Lys Asp Ala Asp Pro His Phe His His Phe Leu Leu Ser Gln	210	215	220
Thr Glu Lys Pro Ala Val Cys Tyr Gln Ala Ile Thr Lys Lys Leu Lys	225	230	235
Ile Cys Glu Glu Glu Thr Gly Ser Thr Ser Ile Gln Ala Ala Asp Ser	245	250	255
Thr Ala Val Asn Gly Ser Ile Thr Pro Thr Asp Lys Lys Ile Gly Phe	260	265	270
Leu Gly Leu Gly Leu Met Gly Ser Gly Ile Val Ser Asn Leu Leu Lys	275	280	285
Met Gly His Thr Val Thr Val Trp Asn Arg Thr Ala Glu Lys Glu Gly	290	295	300
Ala Arg Leu Gly Arg Thr Pro Ala Glu Val Val Ser Thr Cys Asp Ile	305	310	315
Thr Phe Ala Cys Val Ser Asp Pro Lys Ala Ala Lys Asp Leu Val Leu	325	330	335
Gly Pro Ser Gly Val Leu Gln Gly Ile Arg Pro Gly Lys Cys Tyr Val	340	345	350
Asp Met Ser Thr Val Asp Ala Asp Thr Val Thr Glu Leu Ala Gln Val	355	360	365
Ile Val Ser Arg Gly Gly Arg Phe Leu Glu Ala Pro Val Ser Gly Asn	370	375	380
Gln Gln Leu Ser Asn Asp Gly Met Leu Val Ile Leu Ala Ala Gly Asp			

```

385          390          395          400
Arg Gly Leu Tyr Glu Asp Cys Ser Ser Cys Phe Gln Ala Met Gly Lys
          405          410          415
Thr Ser Phe Phe Leu Gly Glu Val Gly Asn Ala Ala Lys Met Met Leu
          420          425          430
Ile Val Asn Met Val Gln Gly Ser Phe Met Ala Thr Ile Ala Glu Gly
          435          440          445
Leu Thr Leu Ala Gln Val Thr Gly Gln Ser Gln Gln Thr Leu Leu Asp
          450          455          460
Ile Leu Asn Gln Gly Gln Leu Ala Ser Ile Phe Leu Asp Gln Lys Cys
465          470          475          480
Gln Asn Ile Leu Gln Gly Asn Phe Lys Pro Asp Phe Tyr Leu Lys Tyr
          485          490          495
Ile Gln Lys Asp Leu Arg Leu Ala Ile Ala Leu Gly Asp Ala Val Asn
          500          505          510
His Pro Thr Pro Met Ala Ala Ala Asn Glu Val Tyr Lys Arg Ala
          515          520          525
Lys Ala Leu Asp Gln Ser Asp Asn Asp Met Ser Ala Val Tyr Arg Ala
          530          535          540

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Tyr Ile His
545

<210> 138
<211> 1097
<212> DNA
<213> Homo sapiens

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<400> 138
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ttttactctt ggacacggtt tccaatttgt cagtttgtct tcacctctcc acaaccacac 180
tttgtttcca gaaaaacaaa tatacactac gtctcctttg gagtgtggtt tcggccaatc 240
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aacaacgtat cagattgaga actttgcaca agcgttttgt tctcagttta agtcgggcag 600
cagggtgcca atgaccttta tctaactc taatggagaa gtggaccata gagtaaggac 660
ttcagtgcca gatttctcag ggtatacaaa tatgatgtct gatgtaagtg agccatgtag 720
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aaaatagttt gacattcaaa gtgacaatgt ttagcaatca aatttacatg tatagattgt 1020
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aaaaaaaaaa aaaaaaa

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<210> 139

<211> 232
 <212> PRT
 <213> Homo sapiens

<400> 139
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 20 25 30
 Ser Ser Pro Leu His Asn His Thr Leu Phe Pro Glu Lys Gln Ile Tyr
 35 40 45
 Thr Thr Ser Pro Leu Glu Cys Gly Phe Gly Gln Ser Val Thr Ser Val
 50 55 60
 Leu Pro Ser Ser Leu Pro Lys Pro Pro Phe Gly Met Leu Phe Gly Ser
 65 70 75 80
 Gln Pro Gly Leu Tyr Leu Ser Ala Leu Asp Ala Thr His Gln Gln Leu
 85 90 95
 Thr Pro Ser Gln Glu Leu Asp Asp Leu Ile Asp Ser Gln Lys Asn Leu
 100 105 110
 Glu Thr Ser Ser Ala Phe Gln Ser Ser Ser Gln Lys Leu Thr Ser Gln
 115 120 125
 Lys Glu Gln Lys Asn Leu Glu Ser Ser Thr Gly Phe Gln Ile Pro Ser
 130 135 140
 Gln Glu Leu Ala Ser Gln Ile Asp Pro Gln Lys Asp Ile Glu Pro Arg
 145 150 155 160
 Thr Thr Tyr Gln Ile Glu Asn Phe Ala Gln Ala Phe Gly Ser Gln Phe
 165 170 175
 Lys Ser Gly Ser Arg Val Pro Met Thr Phe Ile Thr Asn Ser Asn Gly
 180 185 190
 Glu Val Asp His Arg Val Arg Thr Ser Val Ser Asp Phe Ser Gly Tyr
 195 200 205
 Thr Asn Met Met Ser Asp Val Ser Glu Pro Cys Ser Thr Arg Val Lys
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 225 230

<210> 140
 <211> 775
 <212> DNA
 <213> Homo sapiens

<400> 140
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 ctttcttcta acctccttag taatgaacct tcacataaag tgtatttaca gcgtctgtgg 180

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ggaaatggac ttactcaat tttaattcca ctgcactcta gccggagtga cagagtaaga 660
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<210> 141

<211> 44

<212> PRT

<213> Homo sapiens

<400> 141

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Met Thr Asn Leu Asn Tyr Gly Ser Cys Pro Gln Tyr Lys Ile Leu Lys
  1             5             10             15

```

```

Lys His Tyr Ile Val Ile Ile Ser Tyr Leu Val Val Arg Leu Val Ala
          20             25             30

```

```

Ser Pro His Gln Arg His Leu Met Ile Tyr Leu Leu
          35             40

```

<210> 142

<211> 2060

<212> DNA

<213> Homo sapiens

<400> 142

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cgctcttatt cccatcagct ttcttatcaa cttcaggtaa cccaagcttt ccttgtttat 540
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tctggtctaa gggaaacattc agcactctag cggcatctga ttggaagttc cctcacccaa 1560
gtaattctca ttccttctc tctccatccc tgaaagaaac aggatggatt ttcctctctt 1620

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tacattgcct gatattctct ttgaaatgag aaatattgct aacatccaag cattctgaag 1860
tcttgcttat cctctcgagt ttagttctca ttttgtttta cattttgttt ggggacttgg 1920
ggcaagctat ttattagagt ttgcaacag agttcttgtt tgaagcctct aaagactacc 1980
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aaaaaaaaaa aaaaaaaaaa
2060

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<210> 143
 <211> 62
 <212> PRT
 <213> Homo sapiens

<400> 143
 Met Thr Val Ile Leu Glu Trp Ala Phe Glu Thr Cys Met Ser Gln Cys
 1 5 10 15
 Glu Ile Ser Ala Arg His Phe Leu His Pro Phe Met Ala Ile Gln Arg
 20 25 30
 Ile Pro Leu Gln Lys Leu Leu Met Cys Tyr Phe Cys Cys Leu Val Met
 35 40 45
 Gln Ala Ala Leu Gly Pro Trp Val Thr Leu Pro Arg Leu Leu
 50 55 60

<210> 144
 <211> 1160
 <212> DNA
 <213> Homo sapiens

<400> 144
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 cctcagcctc ccaagtagct gggattacag ccctgaaaac cactcgcttg cagagcgctg 180
 gatcagcaat gcttactagt tcttcattca aacaccggat taaagagcag gaagactaca 240
 tccgagattg gactgctcat cgagaagaga tagccaggat cagccaagat cttgctctca 300
 ttgctcggga gatcaacgat gtagcaggag agatagattc agtgacttca tcaggcactg 360
 cccttagtac cacagtaagc actgctgcca ccaccctgg ctctgccata gacactagag 420
 aagagttggt tgatcgtgtt ttgatgaaa gcctcaactt ccaaaagatt cctccattag 480
 ttcatctcaa aacaccagaa ggaaacaacg gtcgatctgg tgatccaaga cctcaagcag 540
 cagagcctcc cgatcactta acaattacaa ggcgagaaac ctggagcagg gatgaagtca 600
 tgggagataa tctgctgctg tcatccgtct ttcagttctc targaagata agacaatcta 660
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 1160

<210> 145
 <211> 309
 <212> PRT
 <213> Homo sapiens

<220>

<221> UNSURE

<222> (152)

<400> 145

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Met Pro Thr Ser Ser Ser Phe Lys His Arg Ile Lys Glu Gln Glu Asp
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Tyr Ile Arg Asp Trp Thr Ala His Arg Glu Glu Ile Ala Arg Ile Ser
      20           25           30

Gln Asp Leu Ala Leu Ile Ala Arg Glu Ile Asn Asp Val Ala Gly Glu
      35           40           45

Ile Asp Ser Val Thr Ser Ser Gly Thr Ala Pro Ser Thr Thr Val Ser
      50           55           60

Thr Ala Ala Thr Thr Pro Gly Ser Ala Ile Asp Thr Arg Glu Glu Leu
      65           70           75           80

Val Asp Arg Val Phe Asp Glu Ser Leu Asn Phe Gln Lys Ile Pro Pro
      85           90           95

Leu Val His Ser Lys Thr Pro Glu Gly Asn Asn Gly Arg Ser Gly Asp
      100          105          110

Pro Arg Pro Gln Ala Ala Glu Pro Pro Asp His Leu Thr Ile Thr Arg
      115          120          125

Arg Arg Thr Trp Ser Arg Asp Glu Val Met Gly Asp Asn Leu Leu Leu
      130          135          140

Ser Ser Val Phe Gln Phe Ser Xaa Lys Ile Arg Gln Ser Ile Asp Lys
      145          150          155          160

Thr Ala Gly Lys Ile Arg Ile Leu Phe Lys Asp Lys Asp Arg Asn Trp
      165          170          175

Asp Asp Ile Glu Ser Lys Leu Arg Ala Glu Ser Glu Val Pro Ile Val
      180          185          190

Lys Thr Ser Ser Met Glu Ile Ser Ser Ile Leu Gln Glu Leu Lys Arg
      195          200          205

Val Glu Lys Gln Leu Gln Ala Ile Asn Ala Met Ile Asp Pro Asp Gly
      210          215          220

Thr Leu Glu Ala Leu Asn Asn Met Gly Phe Pro Ser Ala Met Leu Pro
      225          230          235          240

Ser Pro Pro Lys Gln Lys Ser Ser Pro Val Asn Asn His His Ser Pro
      245          250          255

Gly Gln Thr Pro Thr Leu Gly Gln Pro Glu Ala Arg Ala Leu His Pro
      260          265          270

Ala Ala Val Ser Ala Ala Ala Glu Phe Glu Asn Ala Glu Ser Glu Ala
      275          280          285

Asp Phe Ser Ile His Phe Asn Arg Val Asn Pro Asp Gly Glu Glu Glu

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290

295

300

Asp Val Thr Val Thr
305

<210> 146
<211> 1536
<212> DNA
<213> Homo sapiens

<220>
<221> unsure
<222> (317)

<400> 146
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agagaactca cttgtttatt gtggggattt attttctgtc ctcttcgagg gcagaagagg 180
ggcttaattt cccacatat gatgggaagg accgagtggg aagtctttcc gagaagaact 240
tcaagcaggt tttaaagaaa tatgacttgc tttgcctcta ctaccatgag ccggtgtctt 300
cagataaggt cagcnaaaa cagttccaac tgaaagaaa cgtgcttgag cttgtggccc 360
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ttgccaagaa actgggtttt gatgaagaag gaagcctgta tattcttaag ggtgatcgca 480
caatagagtt tgatggcgag tttgcagctg atgtcttggg ggagtccctc ttggatctaa 540
ttgaagaccc agtggagatc atcagcagca aactggaagt ccaagccttc gaacgcattg 600
aagactacat caaactcatt ggctttttca agagtggagg ctccagaatac tacaaggctt 660
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<210> 147
<211> 268
<212> PRT
<213> Homo sapiens

<220>
<221> UNSURE
<222> (67)

<400> 147
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Cys Arg Ala Glu Glu Gly Leu Asn Phe Pro Thr Tyr Asp Gly Lys Asp
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Arg Val Val Ser Leu Ser Glu Lys Asn Phe Lys Gln Val Leu Lys Lys

35 40 45
 Tyr Asp Leu Leu Cys Leu Tyr Tyr His Glu Pro Val Ser Ser Asp Lys
 50 55 60
 Val Thr Xaa Lys Gln Phe Gln Leu Lys Glu Ile Val Leu Glu Leu Val
 65 70 75 80
 Ala His Val Leu Glu His Lys Ala Ile Gly Phe Val Met Val Asp Ala
 85 90 95
 Lys Lys Glu Ala Lys Leu Ala Lys Lys Leu Gly Phe Asp Glu Glu Gly
 100 105 110
 Ser Leu Tyr Ile Leu Lys Gly Asp Arg Thr Ile Glu Phe Asp Gly Glu
 115 120 125
 Phe Ala Ala Asp Val Leu Val Glu Phe Leu Leu Asp Leu Ile Glu Asp
 130 135 140
 Pro Val Glu Ile Ile Ser Ser Lys Leu Glu Val Gln Ala Phe Glu Arg
 145 150 155 160
 Ile Glu Asp Tyr Ile Lys Leu Ile Gly Phe Phe Lys Ser Glu Asp Ser
 165 170 175
 Glu Tyr Tyr Lys Ala Phe Glu Glu Ala Ala Glu His Phe Gln Pro Tyr
 180 185 190
 Ile Lys Phe Phe Ala Thr Phe Asp Lys Gly Val Ala Lys Lys Leu Ser
 195 200 205
 Leu Lys Met Asn Glu Val Asp Phe Tyr Glu Pro Phe Met Asp Glu Pro
 210 215 220
 Ile Ala Ile Pro Asn Lys Pro Tyr Thr Glu Glu Glu Leu Val Glu Phe
 225 230 235 240
 Val Lys Glu His Gln Arg Cys Leu Arg Trp His Val Gly Ala Gly Gly
 245 250 255
 Leu Gly Ser Gly Glu Trp Arg Gly Ala Ser Leu Cys
 260 265

<210> 148

<211> 1009

<212> DNA

<213> Homo sapiens

<400> 148

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 aacttgacag gaagtcaact tcaagcagat tgacttgaag cgggatctca ttttaggaagc 120
 ataagtgtcc aatcaaaaac tgtgtatttt tttaaatttg gaaaatactc aagttccagt 180
 tgcttatcat tctccttcac tttctgaaaa cctggcaatc ccatgtggac ttctggtaga 240
 atgagcaatg caaagaactg gcttggaactt ggcattgtct tgtacttctg ggggctgatg 300
 gaccttacga ccaccgttct ctccggacacc ccaacaccac aaggtgaatt agaagcactc 360
 ctgtcagaca agccacagtc acatcagcgg accaagarga gctggggttg gaaccagttt 420
 ttcgttcttg aagagtacac tgggaccgac cctttgtatg tcggcaagggt aagaaatgcc 480
 aagtagaagt gaccggggtg gtggatattg aaattgaata tgaattgagt atcaaagttg 540

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gtccatgtct ctggtatgaa tgggaaaaag tgggaattgg gatttgaggg aaaaggctca 720
gacctgcaa gagctattca agtcctaaaa gaggcagcag cagctgtctg ggaatgacag 780
aatgggggag agggaaactt ggaatacaaa gaagagtaca gagttttttg ctttgtgttt 840
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<210> 149

<211> 87

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (59)

<400> 149

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Met Trp Thr Ser Gly Arg Met Ser Asn Ala Lys Asn Trp Leu Gly Leu
  1              5              10              15

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Gly Met Ser Leu Tyr Phe Trp Gly Leu Met Asp Leu Thr Thr Thr Val
      20              25              30

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Leu Ser Asp Thr Pro Thr Pro Gln Gly Glu Leu Glu Ala Leu Leu Ser
      35              40              45

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Asp Lys Pro Gln Ser His Gln Arg Thr Lys Xaa Ser Trp Val Trp Asn
      50              55              60

```

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Gln Phe Phe Val Leu Glu Glu Tyr Thr Gly Thr Asp Pro Leu Tyr Val
      65              70              75              80

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Gly Lys Val Arg Asn Ala Lys
      85

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<210> 150

<211> 2546

<212> DNA

<213> Homo sapiens

<400> 150

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ctgatgctat tgatgatgtt tgctgtccac tgtacctggg tcacaagcaa tgccactact 180
agtccaagtg tagtcctggc ctcatacaat catgatggca ccaggaatat cttagatgat 240
tttagagaag cttacttttg gctaaggcaa aatacagatg aacatgcacg agtaatgtct 300
tgggtgggatt atggctatca gatagctgga atggctaata gaactacgtt ggtggataat 360
aacacctgga ataacagcca catagcactg gtgggaaaaa ctatgtcttc taatgaaaca 420
gcagcctata aaatcatgag gactctagat gtagattatg ttttggttat ttttgagggg 480
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<210> 151

<211> 286

<212> PRT

<213> Homo sapiens

<400> 151

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Met Leu Met Leu Met Leu Leu Met Met Phe Ala Val His Cys Thr Trp
 1             5             10             15

Val Thr Ser Asn Ala Tyr Ser Ser Pro Ser Val Val Leu Ala Ser Tyr
      20             25             30

Asn His Asp Gly Thr Arg Asn Ile Leu Asp Asp Phe Arg Glu Ala Tyr
      35             40             45

Phe Trp Leu Arg Gln Asn Thr Asp Glu His Ala Arg Val Met Ser Trp
      50             55             60

Trp Asp Tyr Gly Tyr Gln Ile Ala Gly Met Ala Asn Arg Thr Thr Leu
      65             70             75             80

Val Asp Asn Asn Thr Trp Asn Asn Ser His Ile Ala Leu Val Gly Lys
      85             90             95

Ala Met Ser Ser Asn Glu Thr Ala Ala Tyr Lys Ile Met Arg Thr Leu
      100            105            110

Asp Val Asp Tyr Val Leu Val Ile Phe Gly Gly Val Ile Gly Tyr Ser
      115            120            125

Gly Asp Asp Ile Asn Lys Phe Leu Trp Met Val Arg Ile Ala Glu Gly
      130            135            140

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Glu His Pro Lys Asp Ile Arg Glu Ser Asp Tyr Phe Thr Pro Gln Gly
 145 150 155 160
 Glu Phe Arg Val Asp Lys Ala Gly Ser Pro Thr Leu Leu Asn Cys Leu
 165 170 175
 Met Tyr Lys Met Ser Tyr Tyr Arg Phe Gly Glu Met Gln Leu Asp Phe
 180 185 190
 Arg Thr Pro Pro Gly Phe Asp Arg Thr Arg Asn Ala Glu Ile Gly Asn
 195 200 205
 Lys Asp Ile Lys Phe Lys His Leu Glu Glu Ala Phe Thr Ser Glu His
 210 215 220
 Trp Leu Val Arg Ile Tyr Lys Val Lys Ala Pro Asp Asn Arg Glu Thr
 225 230 235 240
 Leu Asp His Lys Pro Arg Val Thr Asn Ile Phe Pro Lys Gln Lys Tyr
 245 250 255
 Leu Ser Lys Lys Thr Thr Lys Arg Lys Arg Gly Tyr Ile Lys Asn Lys
 260 265 270
 Leu Val Phe Lys Lys Gly Lys Lys Ile Ser Lys Lys Thr Val
 275 280 285

<210> 152

<211> 4061

<212> DNA

<213> Homo sapiens

<400> 152

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 gccccaaaaa gaaaccaaga agtgggttcta cgtcgcaaaa ctgaagaggt tacggctctt 240
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 gagaatggag agggagataa aaatgtggct aatatcaatg aagagatgga gtcactgact 720
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<210> 153

<211> 910

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (43)

<400> 153

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Glu Lys Ala Arg Leu Thr Glu Ser Arg Asn Arg Glu Ile Ala Gln
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Leu Lys Lys Asp Gln Arg Lys Arg Asp His Xaa Leu Arg Leu Leu Glu
 35 40 45
 Ala Gln Lys Arg Asn Gln Glu Val Val Leu Arg Arg Lys Thr Glu Glu
 50 55 60
 Val Thr Ala Leu Arg Arg Gln Val Arg Pro Met Ser Asp Lys Val Ala
 65 70 75 80
 Gly Lys Val Thr Arg Lys Leu Ser Ser Ser Asp Ala Pro Ala Gln Asp
 85 90 95
 Thr Gly Ser Ser Ala Ala Ala Val Glu Thr Asp Ala Ser Arg Thr Gly
 100 105 110
 Ala Gln Gln Lys Met Arg Ile Pro Val Ala Arg Val Gln Ala Leu Pro
 115 120 125
 Thr Pro Ala Thr Asn Gly Asn Arg Lys Lys Tyr Gln Arg Lys Gly Leu
 130 135 140
 Thr Gly Arg Val Phe Ile Ser Lys Thr Ala Arg Met Lys Trp Gln Leu
 145 150 155 160
 Leu Glu Arg Arg Val Thr Asp Ile Ile Met Gln Lys Met Thr Ile Ser
 165 170 175
 Asn Met Glu Ala Asp Met Asn Arg Leu Leu Lys Gln Arg Glu Glu Leu
 180 185 190
 Thr Lys Arg Arg Glu Lys Leu Ser Lys Arg Arg Glu Lys Ile Val Lys
 195 200 205
 Glu Asn Gly Glu Gly Asp Lys Asn Val Ala Asn Ile Asn Glu Glu Met
 210 215 220
 Glu Ser Leu Thr Ala Asn Ile Asp Tyr Ile Asn Asp Ser Ile Ser Asp
 225 230 235 240
 Cys Gln Ala Asn Ile Met Gln Met Glu Glu Ala Lys Glu Glu Gly Glu
 245 250 255
 Thr Leu Asp Val Thr Ala Val Ile Asn Ala Cys Thr Leu Thr Glu Ala
 260 265 270
 Arg Tyr Leu Leu Asp His Phe Leu Ser Met Gly Ile Asn Lys Gly Leu
 275 280 285
 Gln Ala Ala Gln Lys Glu Ala Gln Ile Lys Val Leu Glu Gly Arg Leu
 290 295 300
 Lys Gln Thr Glu Ile Thr Ser Ala Thr Gln Asn Gln Leu Leu Phe His
 305 310 315 320
 Met Leu Lys Glu Lys Ala Glu Leu Asn Pro Glu Leu Asp Ala Leu Leu
 325 330 335
 Gly His Ala Leu Gln Asp Leu Asp Ser Val Pro Leu Glu Asn Val Glu
 340 345 350

Asp Ser Thr Asp Glu Asp Ala Pro Leu Asn Ser Pro Gly Ser Glu Gly
 355 360 365
 Ser Thr Leu Ser Ser Asp Leu Met Lys Leu Cys Gly Glu Val Lys Pro
 370 375 380
 Lys Asn Lys Ala Arg Arg Arg Thr Thr Thr Gln Met Glu Leu Leu Tyr
 385 390 395 400
 Ala Asp Ser Ser Glu Leu Ala Ser Asp Thr Ser Thr Gly Asp Ala Ser
 405 410 415
 Leu Pro Gly Pro Leu Thr Pro Val Ala Glu Gly Gln Glu Ile Gly Met
 420 425 430
 Asn Thr Glu Thr Ser Gly Thr Ser Ala Arg Glu Lys Glu Leu Ser Pro
 435 440 445
 Pro Pro Gly Leu Pro Ser Lys Ile Gly Ser Ile Ser Arg Gln Ser Ser
 450 455 460
 Leu Ser Glu Lys Lys Ile Pro Glu Pro Ser Pro Val Thr Arg Arg Lys
 465 470 475 480
 Ala Tyr Glu Lys Ala Glu Lys Ser Lys Ala Lys Glu Gln Lys His Ser
 485 490 495
 Asp Ser Gly Thr Ser Glu Ala Ser Leu Ser Pro Pro Ser Ser Pro Pro
 500 505 510
 Ser Arg Pro Arg Asn Glu Leu Asn Val Phe Asn Arg Leu Thr Val Ser
 515 520 525
 Gln Gly Asn Thr Ser Val Gln Gln Asp Lys Ser Asp Glu Ser Asp Ser
 530 535 540
 Ser Leu Ser Glu Val His Ser Arg Ser Ser Arg Arg Gly Ile Ile Asn
 545 550 555 560
 Pro Phe Pro Ala Ser Lys Gly Ile Arg Ala Phe Pro Leu Gln Cys Ile
 565 570 575
 His Ile Ala Glu Gly His Thr Lys Ala Val Leu Cys Val Asp Ser Thr
 580 585 590
 Asp Asp Leu Leu Phe Thr Gly Ser Lys Asp Arg Thr Cys Lys Val Trp
 595 600 605
 Asn Leu Val Thr Gly Gln Glu Ile Met Ser Leu Gly Gly His Pro Asn
 610 615 620
 Asn Val Val Ser Val Lys Tyr Cys Asn Tyr Thr Ser Leu Val Phe Thr
 625 630 635 640
 Val Ser Thr Ser Tyr Ile Lys Val Trp Asp Ile Arg Asp Ser Ala Lys
 645 650 655
 Cys Ile Arg Thr Leu Thr Ser Ser Gly Gln Val Thr Leu Gly Asp Ala
 660 665 670

Cys Ser Ala Ser Thr Ser Arg Thr Val Ala Ile Pro Ser Gly Glu Asn
 675 680 685
 Gln Ile Asn Gln Ile Ala Leu Asn Pro Thr Gly Thr Phe Leu Tyr Ala
 690 695 700
 Ala Ser Gly Asn Ala Val Arg Met Trp Asp Leu Lys Arg Phe Gln Ser
 705 710 715 720
 Thr Gly Lys Leu Thr Gly His Leu Gly Pro Val Met Cys Leu Thr Val
 725 730 735
 Asp Gln Ile Ser Ser Gly Gln Asp Leu Ile Ile Thr Gly Ser Lys Asp
 740 745 750
 His Tyr Ile Lys Met Phe Asp Val Thr Glu Gly Ala Leu Gly Thr Val
 755 760 765
 Ser Pro Thr His Asn Phe Glu Pro Pro His Tyr Asp Gly Ile Glu Ala
 770 775 780
 Leu Thr Ile Gln Gly Asp Asn Leu Phe Ser Gly Ser Arg Asp Asn Gly
 785 790 795 800
 Ile Lys Lys Trp Asp Leu Thr Gln Lys Asp Leu Leu Gln Gln Val Pro
 805 810 815
 Asn Ala His Lys Asp Trp Val Cys Ala Leu Gly Val Val Pro Asp His
 820 825 830
 Pro Val Leu Leu Ser Gly Cys Arg Gly Gly Ile Leu Lys Val Trp Asn
 835 840 845
 Met Asp Thr Phe Met Pro Val Gly Glu Met Lys Gly His Asp Ser Pro
 850 855 860
 Ile Asn Ala Ile Cys Val Asn Ser Thr His Ile Phe Thr Ala Ala Asp
 865 870 875 880
 Asp Arg Thr Val Arg Ile Trp Lys Ala Arg Asn Leu Gln Asp Gly Gln
 885 890 895
 Ile Ser Asp Thr Gly Asp Leu Gly Glu Asp Ile Ala Ser Asn
 900 905 910

<210> 154

<211> 372

<212> DNA

<213> Homo sapiens

<400> 154

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 ttggatcagt gctattgtga aaggacttgc accatgaagg gaaccaccta ccgagaattt 180
 ggtcctgga tagacggctg taagaactgc acatgcctga atggaacat ccagtgtgaa 240
 actctaattt gcccaaatcc tgactgccca ctttaagtccg ctcttgcgta tgtggatggc 300
 aaatgctgta aggaatgcaa atcgatatcc caatttcaag gacgaaccta ctttgaagga 360
 gaaagaaata ca 372

<210> 155
 <211> 761
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (108)

<220>
 <221> unsure
 <222> (191)

<220>
 <221> unsure
 <222> (268)

<220>
 <221> unsure
 <222> (299)

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 caaagtttgt aaaggttatg atttttgttt tgaaaggcat aactgcatgg agaattccat 180
 ctgcagaaat ntgaatgaca gggctgtttg tagctgtcga gatggtttta gggttttctg 240
 agaggataat gcctactgtg aagacatnga tgagtgtgct gaagggcgcc attactgtng 300
 tgaaaataca atgtgtgtca acaccccggt ttcttttatg tgcattctga aaactggata 360
 catcagaatt gatgattatt catgtacaga acatgatgag tgtatcaca atcagcacag 420
 ctgtgatgaa aatgctttat gcttcaacac tgttgaggga cacaactgtg ttgcaagcc 480
 gggctataca gggaatggaa cgacatgcaa agcattttgc aaagatggct gtaggaatgg 540
 aggagcctgt attgccgcta atgtgtgtgc ctgcccacaa ggcttccactg gaccagctg 600
 tgaaacggac attgatgaat gctctgatgg ttttgttcaa tgtgacagtc gtgctaattg 660
 cattaacctg cctggatggt accactgtga gtgcagagat ggctaccatg acaatgggat 720
 gttttcacca agtggagaat cgtgtgaaga tattgatgag t 761

<210> 156
 <211> 240
 <212> PRT
 <213> Homo sapiens

<220>
 <221> UNSURE
 <222> (23)

<220>
 <221> UNSURE
 <222> (51)

<220>
 <221> UNSURE
 <222> (76)

<220>
 <221> UNSURE
 <222> (87)

<400> 156
 Met Lys Phe Val Glu Ser Ser Gly Cys Pro Ala Leu Asp Cys Pro Glu
 1 5 10 15

Ser His Gln Ile Thr Leu Xaa His Ser Cys Cys Lys Val Cys Lys Gly
 20 25 30
 Tyr Asp Phe Cys Phe Glu Arg His Asn Cys Met Glu Asn Ser Ile Cys
 35 40 45
 Arg Asn Xaa Asn Asp Arg Ala Val Cys Ser Cys Arg Asp Gly Phe Arg
 50 55 60
 Val Phe Arg Glu Asp Asn Ala Tyr Cys Glu Asp Xaa Asp Glu Cys Ala
 65 70 75 80
 Glu Gly Arg His Tyr Cys Xaa Glu Asn Thr Met Cys Val Asn Thr Pro
 85 90 95
 Gly Ser Phe Met Cys Ile Cys Lys Thr Gly Tyr Ile Arg Ile Asp Asp
 100 105 110
 Tyr Ser Cys Thr Glu His Asp Glu Cys Ile Thr Asn Gln His Ser Cys
 115 120 125
 Asp Glu Asn Ala Leu Cys Phe Asn Thr Val Gly Gly His Asn Cys Val
 130 135 140
 Cys Lys Pro Gly Tyr Thr Gly Asn Gly Thr Thr Cys Lys Ala Phe Cys
 145 150 155 160
 Lys Asp Gly Cys Arg Asn Gly Gly Ala Cys Ile Ala Ala Asn Val Cys
 165 170 175
 Ala Cys Pro Gln Gly Phe Thr Gly Pro Ser Cys Glu Thr Asp Ile Asp
 180 185 190
 Glu Cys Ser Asp Gly Phe Val Gln Cys Asp Ser Arg Ala Asn Cys Ile
 195 200 205
 Asn Leu Pro Gly Trp Tyr His Cys Glu Cys Arg Asp Gly Tyr His Asp
 210 215 220
 Asn Gly Met Phe Ser Pro Ser Gly Glu Ser Cys Glu Asp Ile Asp Glu
 225 230 235 240

<210> 157
 <211> 342
 <212> DNA
 <213> Homo sapiens

<400> 157
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 atgttatgta cagtacactc tgaaaagaaa tctgaaacaa gttattgtaa tgataaaaaat 180
 aatgcacagg catgggttact taatatcttc taacaggaaa agtcatccct atttccttgt 240
 ttactgcac ttaattattat ttggttgaat ttgttcagta taagttcggt ccttggtgcaa 300
 aattaaataa atatttttct taccttaaaa aaaaaaaaaa aa 342

<210> 158
 <211> 1445
 <212> DNA

<213> Homo sapiens

<400> 158

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aaccctcggg tcttctctgca atacagtggg tacaatttgt catggctact ctgagataag 180
accacttttt tatctgagct tctgtgacct gctcctggga ctttctgtggc tcacggagac 240
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tgagacagata ttctacattt cctcatttct ctacaccgtc aattacatct ggtatttgta 360
cacagagctg aggatgaaac acacccaaag tggacagagc acatctccac tggatgata 420
ttatacttgt cgattttgtc aaatggcctt tgttttctca agcctgatac ctctgctatt 480
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aaaaa 1445

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<210> 159

<211> 245

<212> PRT

<213> Homo sapiens

<400> 159

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Met Lys His Thr Gln Ser Gly Gln Ser Thr Ser Pro Leu Val Ile Asp
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Tyr Thr Cys Arg Phe Cys Gln Met Ala Phe Val Phe Ser Ser Leu Ile
      20             25             30

Pro Leu Leu Leu Met Thr Pro Val Phe Cys Leu Gly Asn Thr Ser Glu
 35             40             45

Cys Phe Gln Asn Phe Ser Gln Ser His Asn Cys Ile Leu Met His Ser
 50             55             60

Pro Pro Ser Ala Met Ala Glu Leu Pro Pro Ser Ala Asn Thr Ser Val
 65             70             75             80

Cys Ser Thr Leu Tyr Phe Tyr Gly Ile Ala Ile Phe Leu Gly Ser Phe
      85             90             95

Val Leu Ser Leu Leu Thr Ile Met Val Leu Leu Ile Arg Ala Gln Thr
 100            105            110

Leu Tyr Lys Lys Phe Val Lys Ser Thr Gly Phe Leu Gly Ser Glu Gln
 115            120            125

Trp Ala Val Ile His Ile Val Asp Gln Arg Val Arg Phe Tyr Pro Val

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130 135 140

Ala Phe Phe Cys Cys Trp Gly Pro Ala Val Ile Leu Met Ile Ile Lys
 145 150 155 160

Leu Thr Lys Pro Gln Asp Thr Lys Leu His Met Ala Leu Tyr Val Leu
 165 170 175

Gln Ala Leu Thr Ala Thr Ser Gln Gly Leu Leu Asn Cys Gly Val Tyr
 180 185 190

Gly Trp Thr Gln His Lys Phe His Gln Leu Lys Gln Glu Ala Arg Arg
 195 200 205

Asp Ala Asp Thr Gln Thr Pro Leu Leu Cys Ser Gln Lys Arg Phe Tyr
 210 215 220

Ser Arg Gly Leu Asn Ser Leu Glu Ser Thr Leu Thr Phe Pro Ala Ser
 225 230 235 240

Thr Ser Thr Ile Phe
 245

<210> 160

<211> 3550

<212> DNA

<213> Homo sapiens

<400> 160

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 ctactatgag gtcagaagcc ttgctgctat atttcacact gctacacttt gctggggctg 180
 gtttcccaga agattctgag ccaatcagta ttctgcatgg caactataca aaacagtatc 240
 cgggtgtttgt gggccacaag ccaggacgga acaccacaca gaggcacagg ctggacatcc 300
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 ttgatataga cacatcacac acsgaagaaa tttattgtag caaaaaactg acatggaaat 420
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<210> 161

<211> 975

<212> PRT

<213> Homo sapiens

<400> 161

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Met Arg Ser Glu Ala Leu Leu Leu Tyr Phe Thr Leu Leu His Phe Ala
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Gly Ala Gly Phe Pro Glu Asp Ser Glu Pro Ile Ser Ile Ser His Gly
          20                      25                      30

Asn Tyr Thr Lys Gln Tyr Pro Val Phe Val Gly His Lys Pro Gly Arg
          35                      40                      45

Asn Thr Thr Gln Arg His Arg Leu Asp Ile Gln Met Ile Met Ile Met
          50                      55                      60

Asn Gly Thr Leu Tyr Ile Ala Ala Arg Asp His Ile Tyr Thr Val Asp
          65                      70                      75                      80

Ile Asp Thr Ser His Thr Glu Glu Ile Tyr Cys Ser Lys Lys Leu Thr
          85                      90                      95

Trp Lys Ser Arg Gln Ala Asp Val Asp Thr Cys Arg Met Lys Gly Lys
          100                      105                      110

His Lys Asp Glu Cys His Asn Phe Ile Lys Val Leu Leu Lys Lys Asn
          115                      120                      125

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Asp Asp Ala Leu Phe Val Cys Gly Thr Asn Ala Phe Asn Pro Ser Cys
 130 135 140
 Arg Asn Tyr Lys Met Asp Thr Leu Glu Pro Phe Gly Asp Glu Phe Ser
 145 150 155 160
 Gly Met Ala Arg Cys Pro Tyr Asp Ala Lys His Ala Asn Val Ala Leu
 165 170 175
 Phe Ala Asp Gly Lys Leu Tyr Ser Ala Thr Val Thr Asp Phe Leu Ala
 180 185 190
 Ile Asp Ala Val Ile Tyr Arg Ser Leu Gly Glu Ser Pro Thr Leu Arg
 195 200 205
 Thr Val Lys His Asp Ser Lys Trp Leu Lys Glu Pro Tyr Phe Val Gln
 210 215 220
 Ala Val Asp Tyr Gly Asp Tyr Ile Tyr Phe Phe Phe Arg Glu Ile Ala
 225 230 235 240
 Val Glu Tyr Asn Thr Met Gly Lys Val Val Phe Pro Arg Val Ala Gln
 245 250 255
 Val Cys Lys Asn Asp Met Gly Gly Ser Gln Arg Val Leu Glu Lys Gln
 260 265 270
 Trp Thr Ser Phe Leu Lys Ala Arg Leu Asn Cys Ser Val Pro Gly Asp
 275 280 285
 Ser His Phe Tyr Phe Asn Ile Leu Gln Ala Val Thr Asp Val Ile Arg
 290 295 300
 Ile Asn Gly Arg Asp Val Val Leu Ala Thr Phe Ser Thr Pro Tyr Asn
 305 310 315 320
 Ser Ile Pro Gly Ser Ala Val Cys Ala Tyr Asp Met Leu Asp Ile Ala
 325 330 335
 Ser Val Phe Thr Gly Arg Phe Lys Glu Gln Lys Ser Pro Asp Ser Thr
 340 345 350
 Trp Thr Pro Val Pro Asp Glu Arg Val Pro Lys Pro Arg Pro Gly Cys
 355 360 365
 Cys Ala Gly Ser Ser Ser Leu Glu Arg Tyr Ala Thr Ser Asn Glu Phe
 370 375 380
 Pro Asp Asp Thr Leu Asn Phe Ile Lys Thr His Pro Leu Met Asp Glu
 385 390 395 400
 Ala Val Pro Ser Ile Phe Asn Arg Pro Trp Phe Leu Arg Thr Met Val
 405 410 415
 Arg Tyr Arg Leu Thr Lys Ile Ala Val Asp Thr Ala Ala Gly Pro Tyr
 420 425 430
 Gln Asn His Thr Val Val Phe Leu Gly Ser Glu Lys Gly Ile Ile Leu
 435 440 445

Lys Phe Leu Ala Arg Ile Gly Asn Ser Gly Phe Leu Asn Asp Ser Leu
 450 455 460
 Phe Leu Glu Glu Met Ser Val Tyr Asn Ser Glu Lys Cys Ser Tyr Asp
 465 470 475 480
 Gly Val Glu Asp Lys Arg Ile Met Gly Met Gln Leu Asp Arg Ala Ser
 485 490 495
 Ser Ser Leu Tyr Val Ala Phe Ser Thr Cys Val Ile Lys Val Pro Leu
 500 505 510
 Gly Arg Cys Glu Arg His Gly Lys Cys Lys Lys Thr Cys Ile Ala Ser
 515 520 525
 Arg Asp Pro Tyr Cys Gly Trp Ile Lys Glu Gly Gly Ala Cys Ser His
 530 535 540
 Leu Ser Pro Asn Ser Arg Leu Thr Phe Glu Gln Asp Ile Glu Arg Gly
 545 550 555 560
 Asn Thr Asp Gly Leu Gly Asp Cys His Asn Ser Phe Val Ala Leu Asn
 565 570 575
 Gly Val Ile Arg Glu Ser Tyr Leu Lys Gly His Asp Gln Leu Val Pro
 580 585 590
 Val Thr Leu Leu Ala Ile Ala Val Ile Leu Ala Phe Val Met Gly Ala
 595 600 605
 Val Phe Ser Gly Ile Thr Val Tyr Cys Val Cys Asp His Arg Arg Lys
 610 615 620
 Asp Val Ala Val Val Gln Arg Lys Glu Lys Glu Leu Thr His Ser Arg
 625 630 635 640
 Arg Gly Ser Met Ser Ser Val Thr Lys Leu Ser Gly Leu Phe Gly Asp
 645 650 655
 Thr Gln Ser Lys Asp Pro Lys Pro Glu Ala Ile Leu Thr Pro Leu Met
 660 665 670
 His Asn Gly Lys Leu Ala Thr Pro Gly Asn Thr Ala Lys Met Leu Ile
 675 680 685
 Lys Ala Asp Gln His His Leu Asp Leu Thr Ala Leu Pro Thr Pro Glu
 690 695 700
 Ser Thr Pro Thr Leu Gln Gln Lys Arg Lys Pro Ser Arg Gly Ser Arg
 705 710 715 720
 Glu Trp Glu Arg Asn Gln Asn Leu Ile Asn Ala Cys Thr Lys Asp Met
 725 730 735
 Pro Pro Met Gly Ser Pro Val Ile Pro Thr Asp Leu Pro Leu Arg Ala
 740 745 750
 Ser Pro Ser His Ile Pro Ser Val Val Val Leu Pro Ile Thr Gln Gln
 755 760 765

Gly Tyr Gln His Glu Tyr Val Asp Gln Pro Lys Met Ser Glu Val Ala
 770 775 780
 Gln Met Ala Leu Glu Asp Gln Ala Ala Thr Leu Glu Tyr Lys Thr Ile
 785 790 795 800
 Lys Glu His Phe Ser Ser Lys Ser Pro Asn His Gly Val Asn Leu Val
 805 810 815
 Glu Asn Leu Asp Ser Leu Pro Pro Lys Val Pro Gln Arg Glu Ala Ser
 820 825 830
 Leu Gly Pro Pro Gly Ala Ser Leu Phe Gln Thr Gly Leu Ser Lys Arg
 835 840 845
 Leu Glu Met His His Ser Phe Ser Tyr Gly Val Asp Tyr Lys Arg Ser
 850 855 860
 Tyr Pro Thr Asn Ser Leu Thr Arg Ser His Gln Ala Thr Thr Leu Lys
 865 870 875 880
 Arg Asn Asn Thr Asn Ser Ser Asn Ser Ser His Leu Ser Arg Asn Gln
 885 890 895
 Ser Phe Gly Arg Gly Asp Asn Pro Pro Pro Ala Pro Gln Arg Val Asp
 900 905 910
 Ser Ile Gln Val His Ser Ser Gln Pro Ser Gly Gln Ala Val Thr Val
 915 920 925
 Ser Arg Gln Pro Ser Leu Asn Ala Tyr Asn Ser Leu Thr Arg Ser Gly
 930 935 940
 Leu Lys Arg Thr Pro Ser Leu Lys Pro Asp Val Pro Pro Lys Pro Ser
 945 950 955 960
 Phe Ala Pro Leu Ser Thr Ser Met Lys Pro Asn Asp Ala Cys Thr
 965 970 975

<210> 162

<211> 1723

<212> DNA

<213> Homo sapiens

<400> 162

ctgcagactt tggggtcacc ggccagccac acaggcaccg ttttcagatg tccacttctc 60
 attgggtaca tcaatctttt aacttttggg gtcacagttt tagccacctt tcgggggggtg 120
 actggagcag taggaggtgt ggggtcattt tatgaatata ataaaatgga gctgactatg 180
 gacrrrgact wagtgtgggg gagaggggac gatacagggt gtgtgtcttg gaggccttg 240
 gggacaggga cccccggtg gtcttatggc aggatgagaa rggagggact tggctcccc 300
 agagcccgtt ggaagctact gttctctcca gtgtctcgag cgtagccaaa ataaggttg 360
 gaggctcccg gctgtctgc tgtggtctga gctggctgca agcccagggt ggggagcgag 420
 tctgggaaga ttggctttga ctctctgttg ccagaggaga tgccatccca gcacggcccc 480
 cactgtatgc caggctcgtg gtggcagcgg gggcaagggg aggggcaagg ctgccccac 540
 cccacgcacc aagtcacgcc aagtctcagc aggtaaaagc acgtgagcct agggcgagcg 600
 gagggagtc tgggtggcccc gcaggtcagg agggaaaagca gggctcagag ggcacgttg 660
 cccagggca gggctctacc tgggggtcag gaggaccttg gtcttgatga ttgattgatt 720
 gatagaatgg agctgggtct gaggctccca ggcttgagct cctgggagtt cttgtgcggt 780

```

gagctgggca gctcctgggt aggtccgggc accaagcagg ccctgatgtg gacagagtcc 840
catcagaggg agctgatgaa gaatgggtccc tgtaagtaag tcactaggtt caacaactgc 900
ctggccgagc actcagcccg tggagctcag gccaacacca gagccccgtt tttaggggcc 960
aggagagcag gtgaccaatt atttggggag tcttgggtag aatttccgcc acacattctc 1020
cccagggtcg caggggtctt ccgaggcagg gcggtggagc aggattcagg atgtggtggg 1080
aatagagtga ggggcagtgg gtgggcagac ctgggcgtca gaggtcctga tgggaaagga 1140
ggcaggggct acccagagag gggggctcgt gtggcacagc cccaccgac tccgccgtcc 1200
ccctccctcg tgagccccgg gggtgtaca tactctactc catcccttg tccatccctg 1260
agaccacccc cgccgccctt gcgtcgactt agcaaccacc tcataggccc acccacctcg 1320
ggatccgagc caaccatccc acatcacaaa ctttgggttg ggggacttta cgttcgttta 1380
atttctcatt ttgtacggag aaatattctt ttcaaaagcg tcttttgact gaagtaactt 1440
tcctggtgct gttgttaact cgttcctttt ttttaatttat tccccacccc caggcagccc 1500
tcctggttcc tactcaccct cccccctcc cccaccctcc gtcccatctg aaccatttgt 1560
ttcttttctt tccgtcagat tttgaaaaa ttctcctctc ctccccgcc cctccacacc 1620
atcctcccs g atttaaata agtcactgt acaagtaaca gatgcactgt gaagattcca 1680
gtattaataa aggtgtactg taattaacaa aaaaaaaaa aaa 1723

```

<210> 163

<211> 101

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (49)

<220>

<221> UNSURE

<222> (51)

<220>

<221> UNSURE

<222> (81)

<400> 163

```

Val Phe Arg Cys Pro Leu Leu Ile Gly Tyr Ile Asn Leu Leu Thr Leu
  1               5               10               15

```

```

Gly Val Thr Val Leu Ala Thr Phe Arg Gly Val Thr Gly Ala Val Gly
      20               25               30

```

```

Gly Val Gly Ser Phe Tyr Glu Tyr Asn Lys Met Glu Leu Thr Met Asp
      35               40               45

```

```

Xaa Asp Xaa Val Trp Gly Arg Gly Asp Asp Thr Gly Cys Val Ser Gly
      50               55               60

```

```

Ser Ala Trp Gly Thr Gly Thr Pro Arg Trp Ser Tyr Gly Arg Met Arg
      65               70               75               80

```

```

Xaa Glu Gly Leu Gly Ser Pro Arg Ala Arg Trp Lys Leu Leu Phe Ser
      85               90               95

```

```

Pro Val Ser Arg Ala
      100

```

<210> 164

<211> 469

<212> DNA

<213> Homo sapiens

<400> 164

```
gcaacataca agccggccat attagagaga tggaaataaa gcttccttaa tgttgatat 60
gtctttgaag tacatccgtg ctttttttt tagcatccaa ccattcctcc cttgtagttc 120
tcgccccctc aaatcacctc ctcccgtagc ccacccgact aacatctcag tctctgaaaa 180
tgcacagaga tgcctggcta cctcgccctg ccttcagcct cacggggctc agtctctttt 240
tctcttttgg gccaccagga cggagcatgg aggtcacagt acctgccacc ctcaacgtcc 300
tcaatggctc tgacgcccgc ctgccctgca ctttcaactc ctgctacaca gtgaaccaca 360
aacagttctc cctgaactgg acttaccagg agtgcaacaa ctgctctgag gagatgttcc 420
tccagttccg catgaagatc attaacctga agctggagcg gtttcaaga 469
```

<210> 165

<211> 96

<212> PRT

<213> Homo sapiens

<400> 165

```
Met His Arg Asp Ala Trp Leu Pro Arg Pro Ala Phe Ser Leu Thr Gly
  1             5             10             15
Leu Ser Leu Phe Phe Ser Leu Val Pro Pro Gly Arg Ser Met Glu Val
      20             25             30
Thr Val Pro Ala Thr Leu Asn Val Leu Asn Gly Ser Asp Ala Arg Leu
      35             40             45
Pro Cys Thr Phe Asn Ser Cys Tyr Thr Val Asn His Lys Gln Phe Ser
      50             55             60
Leu Asn Trp Thr Tyr Gln Glu Cys Asn Asn Cys Ser Glu Glu Met Phe
      65             70             75             80
Leu Gln Phe Arg Met Lys Ile Ile Asn Leu Lys Leu Glu Arg Phe Gln
      85             90             95
```

<210> 166

<211> 454

<212> DNA

<213> Homo sapiens

<400> 166

```
tggcttttgg ctacagagag ggaagggaaa gcctgaggcc ggcataaggg gaggccttgg 60
aacctgagct gccaatgcca gccctgtccc atctgcggcc acgatactcg ctctctctcc 120
aacaactcct ttggtgggga caaaagtgc aattgtaggc caggcacagt ggctcagcc 180
tgtaatccca gcactttggg aggccaaggc ggggtggatta cctccatctg tttagtagaa 240
atgggcaaaa ccccatTTTT actaaaaata caagaattag ctgggcgtgg tggcgtgtgc 300
ctgtaatccc agctatttgg gaggtctgag caggagaatc gcttgagccc gggaagcaga 360
ggttgcagtg aactgagata gtgatagtgc cactgcaatt cagcctgggt gacatagaga 420
gactccatct caaaaaaaaaa aaaaaaaaaa aaaa 454
```

<210> 167

<211> 736

<212> DNA

<213> Homo sapiens

<220>

<221> unsure

<222> (680)

<220>
 <221> unsure
 <222> (704)

<400> 167
 gtttttaaac attatgttct acatgataaa tacatataat agtatgtcta tttaaataat 60
 taaatttgaa aaaaactaat caaatattat cataagtaat gataaaaacc acaatttctt 120
 ttgcagcaaa ctaataacac ctggatttct caatttatta agttgtactt acctgatgct 180
 gatgatgatt actgtattta cacattgtct cagagctcac tcttgcgag gttgtggcct 240
 cgaaaatgcc ttgttgcccc tctggaatct gtcttttcag ctccatctcc tctcctcac 300
 ctctgtctgt ggtgcacaga tacctatagg caggctccat ctctcctcc ccagctcctc 360
 ccctagtcca cagataccta taggcaggct tcatctctc ctccccagct tctccccctag 420
 tgcacagata cctataggca ggctccatct cctcctcccc agctcctccc ctartgcaca 480
 gacacctata ggcaagctcc atctcctcct ctttagctag cctccccatc tcatcacaac 540
 gcatgtctgt gacctttggt aatcatttac agtgccacac ggaaccctgt attttgcaca 600
 cagcaaaaaca aacaatgttt agctttatct atggtatttg atgactgtaa atggaaataa 660
 atattgttct ttattttttn aaaaaaaaaa aaaaaaaaaa aaanaaaaaa aaaaaaaaaa 720
 aaaaaaaaaa aaaaaa 736

<210> 168
 <211> 114
 <212> PRT
 <213> Homo sapiens

<220>
 <221> UNSURE
 <222> (100)

<400> 168
 Met Leu Met Met Ile Thr Val Phe Thr His Cys Leu Arg Ala His Ser
 1 5 10 15
 Cys Gly Gly Cys Gly Leu Glu Asn Ala Leu Leu Ser Leu Trp Asn Leu
 20 25 30
 Ser Phe Gln Leu His Leu Leu Leu Thr Ser Cys Cys Gly Ala Gln
 35 40 45
 Ile Pro Ile Gly Arg Leu His Leu Leu Leu Pro Ser Ser Ser Pro Ser
 50 55 60
 Ala Gln Ile Pro Ile Gly Arg Leu His Leu Leu Leu Pro Ser Phe Ser
 65 70 75 80
 Pro Ser Ala Gln Ile Pro Ile Gly Arg Leu His Leu Leu Leu Pro Ser
 85 90 95
 Ser Ser Pro Xaa Ala Gln Thr Pro Ile Gly Lys Leu His Leu Leu Leu
 100 105 110
 Phe Ser

<210> 169
 <211> 1427
 <212> DNA
 <213> Homo sapiens

<400> 169

```

gtagttacta actccaacac ctaatagcat tggtagaaa cttataaatg cagttattta 60
gcctcgacta agatttttct gatacctagt ttcacttttt aatgcctctt gaaagttttt 120
tgatcagttg tttaatggga gatctgaaat gttaaaactca gaccagaaag aagagaacct 180
gttttctaga aattagggtt ttaatccaag taagatgcaa gcttttgctt ttttaataac 240
ttgtatagct aaaaacttga cgggtgaaaag ctctcagatc aaagctgac cttctgtcag 300
taatgattct aaaaataaagc aagattttta tggggaatat attttatttc attcttatct 360
caaacctagg tactgtgggc gttttgagtt catttcgagg cattttcaat gtgcctcagg 420
ccacatccaa cctctycca gggccagatt taatgttcag cctcataaag gttatcatag 480
ttttaacatt taagtactat tttgcagtgg gtatatacca aaatttgcta atagtaagat 540
aaccttagtt atatatcatt cacgttagtt ctatcttgga ggcaataaac atttcttggt 600
caagaatttc atgttctatc ttggaggcaa taaacaaaca ttttttggtc aaaattaggg 660
ctaccctatt gtccttatgt cttttcctga tctgtggtca aacatttttc ttagtcattt 720
agaaatttct tatgttggtt taaattttct ttaaatctag aatggagtat gtgaccaata 780
ctttcctttg gaatgggatg gacatttgaa atagagccca ttctttataa agtataaaat 840
atgtttaatg ctagtatttt taactaaact tttgagaaac tagattcaca tgctgttgta 900
agaaataata cagagacctc tttcgtgtac ctttactttt gtttccaaca cagtgaacat 960
ctttcaaaac tgcatacaa tatcataccc aggatactga cactgggtata gctaagatag 1020
agaacgtttc cacacagaac tttttctagc acagggatcc ctcatcttgc ttttgatgac 1080
cataccactc tcaactccat cctactccc ttcttaaccc ttggcaacca taatctgttc 1140
tccattttta tagttttttt tttttcattt caataaagct gtataactgg aatcataata 1200
atatgtaacc ttttgggatt ggcttttttt catttagcat gattttcttg aggttaatcc 1260
agcttattat gtgtatcaag tctattgaca ggtacttttt agtgtgaata gaatcccata 1320
gtatagatgt accacagttt gttaactgt tcacctgctg agagacattg ggccagtttt 1380
tggtactat aaataaagtt gctataaaca aaaaaaaaa aaaaaaa 1427

```

<210> 170

<211> 79

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (45)

<400> 170

```

Met Ile Leu Lys Ile Ser Lys Ile Leu Met Gly Asn Ile Phe Tyr Phe
 1             5             10            15
Ile Leu Ile Ser Asn Leu Gly Thr Val Val Val Leu Ser Ser Phe Arg
          20             25             30
Gly Ile Phe Asn Val Pro Gln Ala Thr Ser Asn Leu Xaa Pro Gly Pro
          35             40             45
Asp Leu Met Phe Ser Leu Ile Lys Val Ile Ile Val Leu Thr Phe Lys
          50             55             60
Tyr Tyr Phe Ala Val Gly Ile Tyr Gln Asn Leu Leu Ile Val Arg
          65             70             75

```

<210> 171

<211> 572

<212> DNA

<213> Homo sapiens

<400> 171

```

tgcagattct gtggttatac tcactcctca tcccaaagaa tgaaatttac cactctctc 60
ttcttggcag ctgtagcagg ggccctgggc tatgctgaag atgcctctc tgactcgac 120

```

```

gggtctgata ctgcccagga agctgggacc tctaagccta atgaagagat ctcaggtcca 180
gcagaaccag cttcaccccc agagacaacc acaacagccc aggagacttc ggcggcagca 240
gttcagggga cagccaaggt cacctcaagc aggcaggaac taaacccctt gaaatccata 300
gtggagaaaa gtatcttact aacagaacaa gcccttgcaa aagcaggaaa aggaatgcac 360
ggaggcgtgc caggtggaaa acaattcatc gaaaatggaa gtgaatttgc acaaaaatta 420
ctgaagaaat tcagtctatt aaaaccatgg gcatgagaag ctgaaaagaa tgggatcatt 480
ggacttaaaag ccttaaatac ccttgtagcc cagagytatt aaaacgaaag catccaaaaa 540
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 572

```

<210> 172

<211> 138

<212> PRT

<213> Homo sapiens

<400> 172

```

Met Lys Phe Thr Thr Leu Leu Phe Leu Ala Ala Val Ala Gly Ala Leu
  1             5             10            15
Val Tyr Ala Glu Asp Ala Ser Ser Asp Ser Thr Gly Ala Asp Pro Ala
             20             25            30
Gln Glu Ala Gly Thr Ser Lys Pro Asn Glu Glu Ile Ser Gly Pro Ala
             35             40            45
Glu Pro Ala Ser Pro Pro Glu Thr Thr Thr Thr Ala Gln Glu Thr Ser
             50             55            60
Ala Ala Ala Val Gln Gly Thr Ala Lys Val Thr Ser Ser Arg Gln Glu
             65             70            75            80
Leu Asn Pro Leu Lys Ser Ile Val Glu Lys Ser Ile Leu Leu Thr Glu
             85             90            95
Gln Ala Leu Ala Lys Ala Gly Lys Gly Met His Gly Gly Val Pro Gly
             100            105            110
Gly Lys Gln Phe Ile Glu Asn Gly Ser Glu Phe Ala Gln Lys Leu Leu
             115            120            125
Lys Lys Phe Ser Leu Leu Lys Pro Trp Ala
             130            135

```

<210> 173

<211> 1223

<212> DNA

<213> Homo sapiens

<400> 173

```

ccttggtcca cgtagctggc aaggtcttca ttcacttgcc actgctagtc ttccaaccct 60
tctggacttt ctttgctctt gtcttgcttt ggtgtactg gatcatgaca cttctttttc 120
ttggcactac cggcagtcct gttcagaatg agcaaggctt tgtggagttc aaaatttctg 180
ggcctctgca gtacatgtgg tggatccatg tgggtggcct gatttggatc agtgaattta 240
ttctagcatg tcagcagatg acagtggcag gagctgtggt aacatactat ttactaggg 300
ataaaaggaa tttgccattt acacctattt tggcatcagt aaatcgctt atycgttacc 360
acctaggtac ggtggcaaaa ggatctttca ttatcacatt agtcaaaatt ccgcgaatga 420
tccttatgta tattcacagt cagctcaaag gaaaggaaaa tgcttgtgca cgatgtgtgc 480
tgaaatcttg catttgttgc ctttgggtgc ttgaaaagtg cctaaattat ttaaatacaga 540
atgcatacac agccacagct atcaacagca ccaacttctg cacctcagca aaggatgcct 600
ttgtcattct ggtggagaat gctttgcgag tggctaccat caacacagta ggagatttta 660

```

```

tggtattcct tggcaagggt ctgatagtct gcagcacagg tttagctggg attatgctgc 720
tcaactacca gcaggactac acagtatggg tgctgcctct gatcatcgtc tgcctctttg 780
ctttcctagt cgctcattgc ttctgtgcta tttatgaaat ggtagtggat gtattattct 840
kgkggttttgc cattgawaca aaataacaatg atgggmgcc c tggcagagaa ttctatatgg 900
ataaagtgtc gatggagttt gtggaaaaca gtaggaaagc aatgaaagaa gctggtaagg 960
gaggcgtcgc tgattccaga gagctaaagc cgatgctgaa gaaaagggtga ctggtctcat 1020
gagccctgaa gaatgaactc agaggaggtt gtttacctga ggttctccca ctcaccagct 1080
gttgagagtc tgcgattatg aagagcagga tcttattact tcaatgaaag catgtaacaa 1140
gtttctcaaa ccaccaacag ccaagtggat ttggtacagt gcggctgtct aataaataat 1200
caaaagcaaa aaaaaaaaaa aaa 1223

```

<210> 174
 <211> 301
 <212> PRT
 <213> Homo sapiens

<220>
 <221> UNSURE
 <222> (246)..(247)

<220>
 <221> UNSURE
 <222> (251)

<220>
 <221> UNSURE
 <222> (258)

<400> 174
 Met Thr Leu Leu Phe Leu Gly Thr Thr Gly Ser Pro Val Gln Asn Glu
 1 5 10 15
 Gln Gly Phe Val Glu Phe Lys Ile Ser Gly Pro Leu Gln Tyr Met Trp
 20 25 30
 Trp Tyr His Val Val Gly Leu Ile Trp Ile Ser Glu Phe Ile Leu Ala
 35 40 45
 Cys Gln Gln Met Thr Val Ala Gly Ala Val Val Thr Tyr Tyr Phe Thr
 50 55 60
 Arg Asp Lys Arg Asn Leu Pro Phe Thr Pro Ile Leu Ala Ser Val Asn
 65 70 75 80
 Arg Leu Ile Arg Tyr His Leu Gly Thr Val Ala Lys Gly Ser Phe Ile
 85 90 95
 Ile Thr Leu Val Lys Ile Pro Arg Met Ile Leu Met Tyr Ile His Ser
 100 105 110
 Gln Leu Lys Gly Lys Glu Asn Ala Cys Ala Arg Cys Val Leu Lys Ser
 115 120 125
 Cys Ile Cys Cys Leu Trp Cys Leu Glu Lys Cys Leu Asn Tyr Leu Asn
 130 135 140
 Gln Asn Ala Tyr Thr Ala Thr Ala Ile Asn Ser Thr Asn Phe Cys Thr
 145 150 155 160
 Ser Ala Lys Asp Ala Phe Val Ile Leu Val Glu Asn Ala Leu Arg Val

165	170	175
Ala Thr Ile Asn Thr Val Gly Asp Phe Met Leu Phe Leu Gly Lys Val		
180	185	190
Leu Ile Val Cys Ser Thr Gly Leu Ala Gly Ile Met Leu Leu Asn Tyr		
195	200	205
Gln Gln Asp Tyr Thr Val Trp Val Leu Pro Leu Ile Ile Val Cys Leu		
210	215	220
Phe Ala Phe Leu Val Ala His Cys Phe Leu Ser Ile Tyr Glu Met Val		
225	230	235
Val Asp Val Leu Phe Xaa Xaa Phe Ala Ile Xaa Thr Lys Tyr Asn Asp		
245	250	255
Gly Xaa Pro Gly Arg Glu Phe Tyr Met Asp Lys Val Leu Met Glu Phe		
260	265	270
Val Glu Asn Ser Arg Lys Ala Met Lys Glu Ala Gly Lys Gly Gly Val		
275	280	285
Ala Asp Ser Arg Glu Leu Lys Pro Met Leu Lys Lys Arg		
290	295	300

<210> 175

<211> 2460

<212> DNA

<213> Homo sapiens

<400> 175

```

gagaagcgcg atgacggcta cgaggccgct gccagctcca aaactagctc aggcgatgcc 60
tcctcactca gcatcgaggg agactaaca actccgggca aagttggggc tgaaaccctt 120
ggaggttaat gccatcaaga aggagcgagg caccaaggag gagcccgtag cagctgatgt 180
catcaaccct atggccttgc gacagcgaga ggagctgcgg gagaagctgg cggctgccaa 240
ggagaagcgc ctgctgaacc aaaagctggg gaagataaag accctaggag aggatgaccc 300
ctggctggac gacactgcag cctggatcga gaggagccgg cagctgcaga aggagaagga 360
cctggcagag aagagggccca agttactgga ggagatggac caaaagttag gtgtcagcac 420
tctggtggag gaggagttag ggcagaggcg gcaggacctg tacagtgcgc gggacctgca 480
gggcctcact gtggagcatg ccattgattc cttccgagaa ggggagacaa tgattcttac 540
cctcaaggac aaaggcgtgc tgcaggagga ggaggacgtg ctggtgaacg tgaacctggt 600
ggataaggag cgggcagaga aaaatgtgga gctgcggaag aagaagcctg actacctgcc 660
ctatgccgag gacgagagcg tggacgacct ggcgagcaa aaacctcgct ctatcctgtc 720
caagtatgac gaaaagcttg aaggggagcg gccacattcc ttccgccttg agcagggcgg 780
cacggctgat ggctgcggg agcgggagct ggaggagatc cgggccaagc tgcggctgca 840
ggctcagtcc ctgagcacag tggggccccg gctggcctcc gaatacctca cgcctgagga 900
gatggtgacc tttaaaaaga ccaagcggag ggtgaagaaa atccgcaaga aggagaagga 960
ggtagtagtg cgggcagatg acttgctgcc tctcggggac cagactcagg atggggactt 1020
tggttccaga ctgcggggac ggggtcgccg ccgagtgtcc gaagtggagg aggagaagga 1080
gcctgtgcct cagcccttgc cgtcgacga caccgagtg gagaacatgg acatcagtga 1140
tgaggaggaa ggtggagctc caccgccggg gtccccgag gtgctggagg aggacgagc 1200
ggagctggag ctgcagaagc agctggagaa gggacgccgg ctgcgacagt tacagcagt 1260
acagcagctg cggacagtg gcgagaaggt ggtggagatt gtgaagaagc tggagtctcg 1320
ccagcggggc tgggaggagg atgaggatcc cgagcggaag ggggccatcg tgttcaacgc 1380
cacgtccgag ttctgccgca ccttggggga gatccccacc tacgggctgg ctggcaatcg 1440
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<210> 176

<211> 563

<212> PRT

<213> Homo sapiens

<400> 176

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Gly Gly Arg Leu Gly Val Leu Lys Leu Glu Met Ser Thr Gly Leu Gly
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<210> 177

<211> 1790

<212> DNA

<213> Homo sapiens

<400> 177

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<211> 115

<212> PRT

<213> Homo sapiens

<400> 178

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Thr Ile Asn Leu Ser Asn Ser Ala Glu Ser Leu Gln Phe Thr Ala Leu

35 40 45
 Asn Pro Ser Leu Gln Thr Lys Ala Asn Leu Met Ser Ser Asn Ser Tyr
 50 55 60
 Asn Ser Leu Leu Ser Gln Phe Arg Leu Gln Arg Leu His Leu Arg Gly
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 Asn Leu Lys Asn Lys Gln Cys Ser Ile Ser Val His Ile Lys Gly Thr
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 <211> 2026
 <212> DNA
 <213> Homo sapiens

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<210> 180

<211> 52
 <212> PRT
 <213> Homo sapiens

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 Arg Ser Gln Ser Arg Gly Leu Phe Met Val Ile Ser Gly Gly Val Val
 35 40 45
 Gln Pro Phe Gln
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<210> 181
 <211> 1138
 <212> DNA
 <213> Homo sapiens

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<210> 182
 <211> 209
 <212> PRT
 <213> Homo sapiens

<400> 182
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 35 40 45
 Lys Lys Gln Asp Phe Asp Glu Asp Asp Ile Leu Lys Glu Leu Glu Glu

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65	70	75 80
Val Lys Pro Thr Glu Asn Asn Glu Glu Glu Phe Thr Ser Lys Asp Lys		
	85	90 95
Lys Lys Lys Gly Gln Lys Gly Lys Lys Gln Ser Phe Asp Asp Asn Asp		
	100	105 110
Ser Glu Glu Leu Glu Asp Lys Asp Ser Lys Ser Lys Lys Thr Ala Lys		
	115	120 125
Pro Lys Val Glu Met Tyr Ser Gly Ser Asp Asp Asp Asp Asp Phe Asn		
	130	135 140
Lys Leu Pro Lys Lys Ala Lys Gly Lys Ala Gln Lys Ser Asn Lys Lys		
	145	150 155 160
Trp Asp Gly Ser Glu Glu Asp Glu Asp Asn Ser Lys Lys Ile Lys Glu		
	165	170 175
Arg Ser Arg Ile Asn Ser Ser Gly Glu Ser Gly Asp Glu Ser Asp Glu		
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Phe Leu Gln Ser Lys Arg Thr Glu Lys Lys Ser Glu Lys Gln Ala Arg		
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Ser

<210> 183
 <211> 912
 <212> DNA
 <213> Homo sapiens

<400> 183
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<210> 184
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 <213> Homo sapiens

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<400> 184
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 35 40 45
 Lys Pro Pro Val Gly Pro Lys Thr Ser Pro Leu Lys Asp Asn Pro Ser
 50 55 60
 Pro Glu Pro Gln Leu Asp Asp Ile Lys Arg Glu Leu Arg Ala Glu Val
 65 70 75 80
 Asp Ile Ile Glu Gln Met Ser Ser Ser Ser Gly Ser Ser Ser Ser Asp
 85 90 95
 Ser Glu Ser Ser Ser Gly Ser Asp Asp Asp Ser Ser Ser Ser Gly Gly
 100 105 110
 Glu Xaa Asn Gly Pro Ala Ser Xaa Pro Gln Xaa Xaa His Gln Gln Pro
 115 120 125
 Tyr Asn Ser Arg Pro Ala Val Ala Asn Gly Thr Ser Arg Pro Gln Gly
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<210> 185
 <211> 4582
 <212> DNA
 <213> Homo sapiens

<400> 185

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tcagcgtcgc cttgatacct ccagcctgaa gttgtcagag taccctaatg ttgaagagct 2640
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tgagaagagc gttcaggaag actggcaaca tttcccaaga tacagaacag cctctcaggg 3480

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ccagtgtgga tgcagagaga gtgtgacaga ggatctgcct gtgaaccacc tgggattagt 4380
caagtcccaa ggtgcccaga gtgggactag ttyttcacag tgtggcagct gcactaatct 4440
gtttgtgagg gaatatccat tccctcactc tactctcctc actatcgga attcattttg 4500
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<210> 186

<211> 1461

<212> PRT

<213> Homo sapiens

<220>

<221> UNSURE

<222> (364)

<220>

<221> UNSURE

<222> (369)

<220>

<221> UNSURE

<222> (1433)

<400> 186

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  1             5             10             15

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```

Met Glu Arg Ile Thr Ser Pro Val Leu Met Gly Glu Glu Asn Asn Val
          20             25             30

```

```

Val His Asn Gln Lys Val Glu Ile Leu Arg Lys Met Leu Gln Lys Glu
      35             40             45

```

```

Gln Glu Arg Leu Gln Leu Leu Gln Glu Asp Tyr Asn Arg Thr Pro Ala
      50             55             60

```

```

Gln Arg Leu Leu Lys Glu Ile Gln Glu Ala Lys Lys His Ile Pro Gln
      65             70             75             80

```

```

Leu Gln Glu Gln Leu Ser Lys Ala Thr Gly Ser Ala Gln Asp Gly Ala
          85             90             95

```

```

Val Val Thr Pro Ser Arg Pro Leu Gly Asp Thr Leu Thr Val Ser Glu
      100             105             110

```

```

Ala Glu Thr Asp Pro Gly Asp Val Leu Gly Arg Thr Asp Cys Ser Ser

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115	120	125
Gly Asp Ala Ser Arg Pro Ser Ser Asp Asn Ala Asp Ser Pro Lys Ser		
130	135	140
Gly Pro Lys Glu Arg Ile Tyr Leu Glu Glu Asn Pro Glu Lys Ser Glu		
145	150	155
Thr Ile Gln Asp Thr Asp Thr Gln Ser Leu Val Gly Ser Pro Ser Thr		
	165	170
Arg Ile Ala Pro His Ile Ile Gly Ala Glu Asp Asp Asp Phe Gly Thr		
	180	185
Glu His Glu Gln Ile Asn Gly Gln Cys Ser Cys Phe Gln Ser Ile Glu		
	195	200
Leu Leu Lys Ser Arg Pro Ala His Leu Ala Val Phe Leu His His Val		
	210	215
Val Ser Gln Phe Asp Pro Ala Thr Leu Leu Cys Tyr Leu Tyr Ser Asp		
	225	230
Leu Tyr Lys His Thr Asn Ser Lys Glu Thr Arg Arg Ile Phe Leu Glu		
	245	250
Phe His Gln Phe Phe Leu Asn Arg Ser Ala His Leu Lys Val Ser Val		
	260	265
Pro Asp Glu Met Ser Ala Asp Leu Glu Lys Arg Arg Pro Glu Leu Ile		
	275	280
Pro Glu Asp Leu His Arg His Tyr Ile Gln Thr Met Gln Glu Arg Val		
	290	295
His Pro Glu Val Gln Arg His Leu Lys Asp Phe Arg Gln Lys Arg Ser		
	305	310
Met Gly Leu Thr Leu Ala Glu Ser Glu Leu Thr Lys Leu Asp Ala Glu		
	325	330
Arg Asp Lys Asp Arg Leu Thr Leu Glu Lys Glu Arg Thr Cys Ala Glu		
	340	345
Gln Ile Val Ala Lys Ile Glu Glu Val Leu Met Xaa Ala Gln Ala Val		
	355	360
Xaa Glu Asp Lys Ser Ser Thr Met Gln Tyr Val Ile Leu Met Tyr Met		
	370	375
Lys His Leu Gly Val Lys Val Lys Glu Pro Arg Asn Leu Glu His Lys		
	385	390
Arg Gly Arg Ile Gly Phe Leu Pro Lys Ile Lys Gln Ser Met Lys Lys		
	405	410
Asp Lys Glu Gly Glu Glu Lys Gly Lys Arg Arg Gly Phe Pro Ser Ile		
	420	425
Leu Gly Pro Pro Arg Arg Pro Ser Arg His Asp Asn Ser Ala Ile Gly		

435 440 445
 Arg Ala Met Glu Leu Gln Lys Ala Arg His Pro Lys His Leu Ser Thr
 450 455 460
 Pro Ser Ser Val Ser Pro Glu Pro Gln Asp Ser Ala Lys Leu Arg Gln
 465 470 475 480
 Ser Gly Leu Ala Asn Glu Gly Thr Asp Ala Gly Tyr Leu Pro Ala Asn
 485 490 495
 Ser Met Ser Ser Val Ala Ser Gly Ala Ser Phe Ser Gln Glu Gly Gly
 500 505 510
 Lys Glu Asn Asp Thr Gly Ser Lys Gln Val Gly Glu Thr Ser Ala Pro
 515 520 525
 Gly Asp Thr Leu Asp Gly Thr Pro Arg Thr Leu Asn Thr Val Phe Asp
 530 535 540
 Phe Pro Pro Pro Pro Leu Asp Gln Val Gln Glu Glu Glu Cys Glu Val
 545 550 555 560
 Glu Arg Val Thr Glu His Gly Thr Pro Lys Pro Phe Arg Lys Phe Asp
 565 570 575
 Ser Val Ala Phe Gly Glu Ser Gln Ser Glu Asp Glu Gln Phe Glu Asn
 580 585 590
 Asp Leu Glu Thr Asp Pro Pro Asn Trp Gln Gln Leu Val Ser Arg Glu
 595 600 605
 Val Leu Leu Gly Leu Lys Pro Cys Glu Ile Lys Arg Gln Glu Val Ile
 610 615 620
 Asn Glu Leu Phe Tyr Thr Glu Arg Ala His Val Arg Thr Leu Lys Val
 625 630 635 640
 Leu Asp Gln Val Phe Tyr Gln Arg Val Ser Arg Glu Gly Ile Leu Ser
 645 650 655
 Pro Ser Glu Leu Arg Lys Ile Phe Ser Asn Leu Glu Asp Ile Leu Gln
 660 665 670
 Leu His Ile Gly Leu Asn Glu Gln Met Lys Ala Val Arg Lys Arg Asn
 675 680 685
 Glu Thr Ser Val Ile Asp Gln Ile Gly Glu Asp Leu Leu Thr Trp Phe
 690 695 700
 Ser Gly Pro Gly Glu Glu Lys Leu Lys His Ala Ala Ala Thr Phe Cys
 705 710 715 720
 Ser Asn Gln Pro Phe Ala Leu Glu Met Ile Lys Ser Arg Gln Lys Lys
 725 730 735
 Asp Ser Arg Phe Gln Thr Phe Val Cln Asp Ala Glu Ser Asn Pro Leu
 740 745 750
 Cys Arg Arg Leu Gln Leu Lys Asp Ile Ile Pro Thr Gln Met Gln Arg

755	760	765
Leu Thr Lys Tyr Pro Leu Leu Leu Asp Asn Ile Ala Lys Tyr Thr Glu		
770	775	780
Trp Pro Thr Glu Arg Glu Lys Val Lys Lys Ala Ala Asp His Cys Arg		
785	790	795
Gln Ile Leu Asn Tyr Val Asn Gln Ala Val Lys Glu Ala Glu Asn Lys		
805	810	815
Gln Arg Leu Glu Asp Tyr Gln Arg Arg Leu Asp Thr Ser Ser Leu Lys		
820	825	830
Leu Ser Glu Tyr Pro Asn Val Glu Glu Leu Arg Asn Leu Asp Leu Thr		
835	840	845
Lys Arg Lys Met Ile His Glu Gly Pro Leu Val Trp Lys Val Asn Arg		
850	855	860
Asp Lys Thr Ile Asp Leu Tyr Thr Leu Leu Leu Glu Asp Ile Leu Val		
865	870	875
Leu Leu Gln Lys Gln Asp Asp Arg Leu Val Leu Arg Cys His Ser Lys		
885	890	895
Ile Leu Ala Ser Thr Ala Asp Ser Lys His Thr Phe Ser Pro Val Ile		
900	905	910
Lys Leu Ser Thr Val Leu Val Arg Gln Val Ala Thr Asp Asn Lys Ala		
915	920	925
Leu Phe Val Ile Ser Met Ser Asp Asn Gly Ala Gln Ile Tyr Glu Leu		
930	935	940
Val Ala Gln Thr Val Ser Glu Lys Thr Val Trp Gln Asp Leu Ile Cys		
945	950	955
Arg Met Ala Ala Ser Val Lys Glu Gln Ser Thr Lys Pro Ile Pro Leu		
965	970	975
Pro Gln Ser Thr Pro Gly Glu Gly Asp Asn Asp Glu Glu Asp Pro Ser		
980	985	990
Lys Leu Lys Glu Glu Gln His Gly Ile Ser Val Thr Gly Leu Gln Ser		
995	1000	1005
Pro Asp Arg Asp Leu Gly Leu Glu Ser Thr Leu Ile Ser Ser Lys Pro		
1010	1015	1020
Gln Ser His Ser Leu Ser Thr Ser Gly Lys Ser Glu Val Arg Asp Leu		
1025	1030	1035
Phe Val Ala Glu Arg Gln Phe Ala Lys Glu Gln His Thr Asp Gly Thr		
1045	1050	1055
Leu Lys Glu Val Gly Glu Asp Tyr Gln Ile Ala Ile Pro Asp Ser His		
1060	1065	1070
Leu Pro Val Ser Glu Glu Arg Trp Ala Leu Asp Ala Leu Arg Asn Leu		

1075	1080	1085
Gly Leu Leu Lys Gln Leu Leu Val Gln Gln Leu Gly Leu Thr Glu Lys 1090		1100
Ser Val Gln Glu Asp Trp Gln His Phe Pro Arg Tyr Arg Thr Ala Ser 1105	1110	1115 1120
Gln Gly Pro Gln Thr Asp Ser Val Ile Gln Asn Ser Glu Asn Ile Lys 1125	1130	1135
Ala Tyr His Ser Gly Glu Gly His Met Pro Phe Arg Thr Gly Thr Gly 1140	1145	1150
Asp Ile Ala Thr Cys Tyr Ser Pro Arg Thr Ser Thr Glu Ser Phe Ala 1155	1160	1165
Pro Arg Asp Ser Val Gly Leu Ala Pro Gln Asp Ser Gln Ala Ser Asn 1170	1175	1180
Ile Leu Val Met Asp His Met Ile Met Thr Pro Glu Met Pro Thr Met 1185	1190	1195 1200
Glu Pro Glu Gly Gly Leu Asp Asp Ser Gly Glu His Phe Phe Asp Ala 1205	1210	1215
Arg Glu Ala His Ser Asp Glu Asn Pro Ser Glu Gly Asp Gly Ala Val 1220	1225	1230
Asn Lys Glu Glu Lys Asp Val Asn Leu Arg Ile Ser Gly Asn Tyr Leu 1235	1240	1245
Ile Leu Asp Gly Tyr Asp Pro Val Gln Glu Ser Ser Thr Asp Glu Glu 1250	1255	1260
Val Ala Ser Ser Leu Thr Leu Gln Pro Met Thr Gly Ile Pro Ala Val 1265	1270	1275 1280
Glu Ser Thr His Gln Gln His Ser Pro Gln Asn Thr His Ser Asp 1285	1290	1295
Gly Ala Ile Ser Pro Phe Thr Pro Glu Phe Leu Val Gln Gln Arg Trp 1300	1305	1310
Gly Ala Met Glu Tyr Ser Cys Phe Glu Ile Gln Ser Pro Ser Ser Cys 1315	1320	1325
Ala Asp Ser Gln Ser Gln Ile Met Glu Tyr Ile His Lys Ile Glu Ala 1330	1335	1340
Asp Leu Glu His Leu Lys Glu Gly Gly Gly Lys Leu Thr Pro Phe Phe 1345	1350	1355 1360
Ala Lys Gly Trp Leu Asp Gln Pro Ser Gln Thr Ser Thr Gln Ile Lys 1365	1370	1375
Val Arg Ala Ala Cys Pro Gly Gly Asp Cys Arg Leu Leu Asp Leu Glu 1380	1385	1390
Tyr Arg Pro Cys Leu Thr Thr Ser Trp Leu Gln Cys Gly Cys Arg Glu		

1395 1400 1405
 Ser Val Thr Glu Asp Leu Pro Val Asn His Leu Gly Leu Val Lys Ser
 1410 1415 1420
 Gln Gly Ala Gln Ser Gly Thr Ser Xaa Ser Gln Cys Gly Ser Cys Thr
 1425 1430 1435 1440
 Asn Leu Phe Val Arg Glu Tyr Pro Phe Pro His Ser Thr Leu Leu Thr
 1445 1450 1455
 Ile Gly Asn Ser Phe
 1460

<210> 187
 <211> 2837
 <212> DNA
 <213> Homo sapiens

<400> 187
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 gggagagaaa aaagaatcaa agccagctgc taccacacgc tcttctggag gaggagggtg 180
 tggcgggtgga aaacgagggtg gcaagaaaga tgattctcac tgggtgtcca ggtttcagaa 240
 ggggtgacatt ccatgggacg acaaggattt caggatgttc ttctcttgga ctgctctgtt 300
 ctgggggtgga gtcatgtttt acttgctgct caagagatcc gggagagaaa tcacttgga 360
 ggactttgtc aataactatc ttcaaaaagg agtagtagac agattggaag tcgtcaacaa 420
 gcgttttgtt cgagtgcctt ttacaccagg aaaaactcct gttgatgggc aatacgtttg 480
 gtttaatat ttgcagtgtg acacctttga acggaatctg gaaactttac agcaggaatt 540
 gggcatagaa ggagaaaatc ggggtgcctgt tgtctacat gctgaaagt atggctcttt 600
 tctgtctgag atgtgcctc cgggtgctcat catcgcttc ctgctctaca ccatcagaag 660
 agggcctgct ggcatggcc ggacaggccg agggatgggc ggactcttca gtgtcggaga 720
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 tgaggaggcc aagctagaga tcatggaatt tgtgaatttc ttgaaaaacc caaagcagta 840
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 aaggaagaga ggaagaggca actttggagg gcagagttag caggagaaca cactcaacca 1140
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 aactccaggg ttttcagggt ctgatgttgc taatgtctgt aatgaagctg cgttgattgc 1380
 tgcaaggcat ctgtcagatt ccataaatca gaaacacttt gaacaggcaa ttgagcagat 1440
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 ataccacgaa gcaggccatg cggttgccgg ctggtatctg gagcacgcag acccgctttt 1560
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 aaaaagaagta ttagataaga atgatatggt tgaacttttg gggccagac catttgcgga 2040
 aaaatctacc tatgaagaat ttgtggaagg cactggcagc ttggatgagg acacctcact 2100
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 gccagccact ggccagctg aaatgatggg gaaaggagtc cttagtctt tcagcctcag 2340

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aggtcacagt ggggtggcagg tgactttccg gaggccttga gggaaatgca cactgtccca 2400
tagcctcatt ggggttcccag acgtgctgga aagggttgagc ccagagtggc cgaggctgga 2460
ccctgtggca ccaagtgggg tcggctgacc gtgtggcagg gattgttgca mtggawtttt 2520
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aaaaaaaaaa aaaaaaa                                     2837

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<210> 188

<211> 686

<212> PRT

<213> Homo sapiens

<400> 188

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Gly Gly Gly Gly Gly Gly Gly Gly Lys Arg Gly Gly Lys Lys Asp Asp
      20              25              30

Ser His Trp Trp Ser Arg Phe Gln Lys Gly Asp Ile Pro Trp Asp Asp
      35              40              45

Lys Asp Phe Arg Met Phe Phe Leu Trp Thr Ala Leu Phe Trp Gly Gly
      50              55              60

Val Met Phe Tyr Leu Leu Leu Lys Arg Ser Gly Arg Glu Ile Thr Trp
      65              70              75              80

Lys Asp Phe Val Asn Asn Tyr Leu Ser Lys Gly Val Val Asp Arg Leu
      85              90              95

Glu Val Val Asn Lys Arg Phe Val Arg Val Thr Phe Thr Pro Gly Lys
      100             105             110

Thr Pro Val Asp Gly Gln Tyr Val Trp Phe Asn Ile Gly Ser Val Asp
      115             120             125

Thr Phe Glu Arg Asn Leu Glu Thr Leu Gln Gln Glu Leu Gly Ile Glu
      130             135             140

Gly Glu Asn Arg Val Pro Val Val Tyr Ile Ala Glu Ser Asp Gly Ser
      145             150             155             160

Phe Leu Leu Ser Met Leu Pro Thr Val Leu Ile Ile Ala Phe Leu Leu
      165             170             175

Tyr Thr Ile Arg Arg Gly Pro Ala Gly Ile Gly Arg Thr Gly Arg Gly
      180             185             190

Met Gly Gly Leu Phe Ser Val Gly Glu Thr Thr Ala Lys Val Leu Lys
      195             200             205

Asp Glu Ile Asp Val Lys Phe Lys Asp Val Ala Gly Cys Glu Glu Ala
      210             215             220

Lys Leu Glu Ile Met Glu Phe Val Asn Phe Leu Lys Asn Pro Lys Gln
      225             230             235             240

```

Tyr Gln Asp Leu Gly Ala Ile Ile Pro Lys Gly Ala Ile Leu Thr Gly
 245 250 255
 Pro Pro Gly Thr Gly Lys Thr Leu Leu Ala Lys Ala Thr Ala Gly Glu
 260 265 270
 Ala Asn Val Pro Phe Ile Thr Val Ser Gly Ser Glu Phe Leu Glu Met
 275 280 285
 Phe Val Gly Val Gly Pro Ala Arg Val Arg Asp Leu Phe Ala Leu Ala
 290 295 300
 Arg Lys Asn Ala Pro Cys Ile Leu Phe Ile Asp Glu Ile Asp Ala Val
 305 310 315 320
 Gly Arg Lys Arg Gly Arg Gly Asn Phe Gly Gly Gln Ser Glu Gln Glu
 325 330 335
 Asn Thr Leu Asn Gln Leu Leu Val Glu Met Asp Gly Phe Asn Thr Thr
 340 345 350
 Thr Asn Val Val Ile Leu Ala Gly Thr Asn Arg Pro Gly Pro Pro Asp
 355 360 365
 Ile Lys Gly Arg Ala Ser Ile Phe Lys Val His Leu Arg Pro Leu Lys
 370 375 380
 Leu Asp Ser Thr Leu Glu Lys Asp Lys Leu Ala Arg Lys Leu Ala Ser
 385 390 395 400
 Leu Thr Pro Gly Phe Ser Gly Ala Asp Val Ala Asn Val Cys Asn Glu
 405 410 415
 Ala Ala Leu Ile Ala Ala Arg His Leu Ser Asp Ser Ile Asn Gln Lys
 420 425 430
 His Phe Glu Gln Ala Ile Glu Arg Val Ile Gly Gly Leu Lys Lys Lys
 435 440 445
 Thr Gln Val Leu Gln Pro Glu Glu Lys Lys Thr Val Ala Tyr His Glu
 450 455 460
 Ala Gly His Ala Val Ala Gly Trp Tyr Leu Glu His Ala Asp Pro Leu
 465 470 475 480
 Leu Lys Val Ser Ile Ile Pro Arg Gly Lys Gly Leu Gly Tyr Ala Gln
 485 490 495
 Tyr Leu Pro Lys Glu Gln Tyr Leu Tyr Thr Lys Glu Gln Leu Leu Asp
 500 505 510
 Arg Met Cys Met Thr Leu Gly Gly Arg Val Ser Glu Glu Ile Phe Phe
 515 520 525
 Gly Arg Ile Thr Thr Gly Ala Gln Asp Asp Leu Arg Lys Val Thr Gln
 530 535 540
 Ser Ala Tyr Ala Gln Ile Val Gln Phe Gly Met Asn Glu Lys Val Gly
 545 550 555 560

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<400> 190
Met Glu Ala Asp Leu Leu Lys Lys Glu His Leu Lys Leu Ala Gln Glu
  1             5             10             15
Ser Cys Pro Ala Ser Pro Ala Leu Leu Tyr Leu Gly Ile Ile Val Ser
          20             25             30
His Thr Glu Leu Glu Leu Val Gln Glu Leu Ser Phe Leu Ile Val Leu
      35             40             45
Tyr Phe Trp Lys His Val Arg Tyr Arg Gly Lys Met Ser Lys Phe

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50 55 60

<210> 191
 <211> 868
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (733)

<400> 191
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 cccagtcctg cacaagcct tggctgtgtg tggcaccct tgcctcctac cccagagcag 120
 ctggctccat tggcttctcc ctgcaccagc cctgtcctca ggggtcagga aaaagcacac 180
 agctttcttt cctctcctcc agaggcctgg aaggagggtg gaggtccagt aagggcctgg 240
 ctgccttgga tttcttggtc' ctgccttgcc aactgcaccc ttagctcct gctccctgtg 300
 accccagaac agagggtgctg ccttccctgt ctcttagaca aagcacaaag ggatgccctg 360
 ctgggcttga gcctgcccac ctgaaggatt ttctctgccc caggggacctt ccatccctga 420
 atacaaggct ctaggcaact tctctctggg tggtagacac tagaatgcct ggcattagcc 480
 ctagaaagga ggttgggtg tatgggtagt gagctagggt gggagaaagg tgggtgctgaa 540
 aggacagatg ctagtgttag ttctactcac tcattcattc attagtcaa cagtactgag 600
 caccacctgc actagaggca gaggggtgaa caagataccc ttttgcctgg ggggacgtcc 660
 acttcccatg ggtttggcta ttccaggaa agcccctcag tctcctccc tgttctggct 720
 gtgtgtgaag gangtgtgtg agcaggccca atcctttgca gcaagaatga gaggtcagag 780
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 cccaagcact ggcagctttg cagccctt 868

<210> 192
 <211> 107
 <212> PRT
 <213> Homo sapiens

<220>
 <221> UNSURE
 <222> (62)

<400> 192
 Met Leu Val Val Val Ser Leu Thr His Ser Phe Ile Ser Ala Thr Val
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 Leu Ser Thr Thr Cys Thr Arg Gly Arg Gly Val Asn Lys Ile Pro Phe
 20 25 30
 Cys Leu Gly Gly Arg Pro Leu Pro Met Gly Leu Ala Ile Ser Arg Lys
 35 40 45
 Ala Pro Gln Ser Ser Ser Leu Phe Trp Leu Cys Val Lys Xaa Val Cys
 50 55 60
 Glu Gln Ala Gln Ser Phe Ala Ala Arg Met Arg Gly Gln Ser Ile Pro
 65 70 75 80
 Leu His Thr His Pro Gly Ala Asp Arg Leu Val Pro Pro Ser Leu His
 85 90 95
 Ala Cys Pro Ser Thr Gly Ser Phe Ala Ala Pro
 100 105

<210> 193
 <211> 467
 <212> DNA
 <213> Homo sapiens

<220>
 <221> unsure
 <222> (57)

<220>
 <221> unsure
 <222> (254)

<400> 193
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 tcataccag taagatgcaa gaaaggaata tttagagca agcagccctg ttccaggggc 120
 cccaggtatg ttagagggcc cagtgggggt ggccacttgg tgtttctacc accccctgcc 180
 atccagtctg gccagctacc tacctgggag gttggtgtac ttggcttaag tacttcatgc 240
 ttatttcagg ctgnttcccc acagcaccgg caggaaatga aggtgcactt atatgcatcc 300
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 <212> DNA
 <213> Homo sapiens

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 <213> Homo sapiens

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 35 40 45

Lys Ser Leu Leu Ile Cys Gln Lys Phe His Ser Val Gly Ser Asn Gly
 50 55 60

Leu Leu Asp Phe Asp Ser Glu Tyr Xaa Glu Leu Trp Asp Trp Leu Ile
 65 70 75 80

Asp Met Glu Ser Leu Val Met Asp Ser His Asp Leu Met Met Ser Glu
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Glu Gln Gln Gln His Leu Tyr Lys Arg Tyr Ser Val Glu Met Ser Ile
 100 105 110

Arg His Leu Lys Lys Thr Glu Leu Leu Ser Lys Val Glu Ala Leu Lys
 115 120 125

Lys Gly Gly Val Leu Leu Pro Asn Asp Leu Leu Glu Lys Val Asp Ser
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Ile Asn Glu Lys Trp Glu Leu Leu Gly Val Phe Ala Phe Leu Leu Leu
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Phe Leu Ile

<210> 196

<211> 3831

<212> DNA

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<210> 197

<211> 1075

<212> PRT

<213> Homo sapiens

<400> 197

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 35 40 45
 Asp Gln Gln Tyr Glu Lys Pro Pro Pro Leu His Thr Gly Ala Asp Trp
 50 55 60
 Lys Ile Val Leu His Leu Pro Glu Ile Glu Thr Trp Leu Arg Met Thr
 65 70 75 80
 Ser Glu Arg Val Arg Asp Leu Thr Tyr Ser Val Gln Gln Asp Ser Asp
 85 90 95
 Ser Lys His Val Asp Val His Leu Val Gln Leu Lys Asp Ile Cys Glu
 100 105 110
 Asp Ile Ser Asp His Val Glu Gln Ile His Ala Leu Leu Glu Thr Glu
 115 120 125
 Phe Ser Leu Lys Leu Leu Ser Tyr Ser Val Asn Val Ile Val Asp Ile
 130 135 140
 His Ala Val Gln Leu Leu Trp His Gln Leu Arg Val Ser Val Leu Val
 145 150 155 160
 Leu Arg Glu Arg Ile Leu Gln Gly Leu Gln Asp Ala Asn Gly Asn Tyr
 165 170 175
 Thr Arg Gln Thr Asp Ile Leu Gln Ala Phe Ser Glu Glu Thr Lys Glu
 180 185 190
 Gly Arg Leu Asp Ser Leu Thr Glu Val Asp Asp Ser Gly Gln Leu Thr
 195 200 205
 Ile Lys Cys Ser Gln Asn Tyr Leu Ser Leu Asp Cys Gly Ile Thr Ala
 210 215 220
 Phe Glu Leu Ser Asp Tyr Ser Pro Ser Glu Asp Leu Leu Ser Gly Leu
 225 230 235 240
 Gly Asp Met Thr Ser Ser Gln Val Lys Thr Lys Pro Phe Asp Ser Trp
 245 250 255
 Ser Tyr Ser Glu Met Glu Lys Glu Phe Pro Glu Leu Ile Arg Ser Val
 260 265 270
 Gly Leu Leu Thr Val Ala Ala Asp Ser Ile Ser Thr Asn Gly Ser Glu
 275 280 285
 Ala Val Thr Glu Glu Val Ser Gln Val Ser Leu Ser Val Asp Asp Lys
 290 295 300
 Gly Gly Cys Glu Glu Asp Asn Ala Ser Ala Val Glu Glu Gln Pro Gly
 305 310 315 320
 Leu Thr Leu Gly Val Ser Ser Ser Ser Gly Glu Ala Leu Thr Asn Ala
 325 330 335

Ala Gln Pro Ser Ser Glu Thr Val Gln Gln Glu Ser Ser Ser Ser Ser
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 His His Asp Ala Lys Asn Gln Gln Pro Val Pro Cys Glu Asn Ala Thr
 355 360 365
 Pro Lys Arg Thr Ile Arg Asp Cys Phe Asn Tyr Asn Glu Asp Ser Pro
 370 375 380
 Thr Gln Pro Thr Leu Pro Lys Arg Gly Leu Phe Leu Lys Glu Glu Thr
 385 390 395 400
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 405 410 415
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 Asp Arg Ser Lys Leu Cys Leu Val Leu Gln Ser Ser Tyr Pro Asn Ser
 435 440 445
 Pro Ser Ala Ala Ser Gln Ser Tyr Glu Cys Leu His Lys Val Gly Asn
 450 455 460
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 465 470 475 480
 Ser Leu Gly Arg Leu Asn Asp Cys Tyr Lys Glu Lys Ser Arg Leu Lys
 485 490 495
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 Arg Gly Thr Gly Ser Gly Lys Gln Ala Lys Asn Thr Lys Ser Ser Ala
 515 520 525
 Val Pro Asn Gly Glu Leu Ser Tyr Thr Ser Lys Ala Ile Glu Gly Pro
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 Gln Thr Asn Ser Ala Ser Thr Ser Ser Leu Glu Pro Cys Asn Gln Arg
 545 550 555 560
 Ser Trp Asn Ala Lys Leu Gln Leu Gln Ser Glu Thr Ser Ser Ser Pro
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 Ala Phe Thr Gln Ser Ser Glu Ser Ser Val Gly Ser Asp Asn Ile Met
 580 585 590
 Ser Pro Val Pro Leu Leu Ser Lys His Lys Ser Lys Lys Gly Gln Ala
 595 600 605
 Ser Ser Pro Ser His Val Thr Arg Asn Gly Glu Val Val Glu Ala Trp
 610 615 620
 Tyr Gly Ser Asp Glu Tyr Leu Ala Leu Pro Ser His Leu Lys Gln Thr
 625 630 635 640
 Glu Val Leu Ala Leu Lys Leu Glu Asn Leu Thr Lys Leu Leu Pro Gln
 645 650 655

Lys Pro Arg Gly Glu Thr Ile Gln Asn Ile Asp Asp Trp Glu Leu Ser
 660 665 670
 Glu Met Asn Ser Asp Ser Glu Ile Tyr Pro Thr Tyr His Val Lys Lys
 675 680 685
 Lys His Thr Arg Leu Gly Arg Val Ser Pro Ser Ser Ser Ser Asp Ile
 690 695 700
 Ala Ser Ser Leu Gly Glu Ser Ile Glu Ser Gly Pro Leu Ser Asp Ile
 705 710 715 720
 Leu Ser Asp Glu Glu Ser Ser Met Pro Leu Ala Gly Met Lys Lys Tyr
 725 730 735
 Ala Asp Glu Lys Ser Glu Arg Ala Ser Ser Ser Glu Lys Asn Glu Ser
 740 745 750
 His Ser Ala Thr Lys Ser Ala Leu Ile Gln Lys Leu Met Gln Asp Ile
 755 760 765
 Gln His Gln Asp Asn Tyr Glu Ala Ile Trp Glu Lys Ile Glu Gly Phe
 770 775 780
 Val Asn Lys Leu Asp Glu Phe Ile Gln Trp Leu Asn Glu Ala Met Glu
 785 790 795 800
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 Cys Ala Leu Lys Glu Ala Val Glu Glu Glu Gly His Gln Leu Leu Glu
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 Leu Ile Ala Ser His Lys Ala Gly Leu Lys Asp Met Leu Arg Met Ile
 850 855 860
 Ala Ser Gln Trp Lys Glu Leu Gln Arg Gln Ile Lys Arg Gln His Ser
 865 870 875 880
 Trp Ile Leu Arg Ala Leu Asp Thr Ile Lys Ala Glu Ile Leu Ala Thr
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 900 905 910
 Val Gln Leu Cys Tyr Leu Glu Ala Gln Arg Asp Ala Val Glu Gln Met
 915 920 925
 Ser Leu Lys Leu Tyr Ser Glu Gln Tyr Thr Ser Ser Ser Lys Arg Lys
 930 935 940
 Glu Glu Phe Ala Asp Met Ser Lys Val His Ser Val Gly Ser Asn Gly
 945 950 955 960
 Leu Leu Asp Phe Asp Ser Glu Tyr Gln Glu Leu Trp Asp Trp Leu Ile
 965 970 975

Asp Met Glu Ser Leu Val Met Asp Ser His Asp Leu Met Met Ser Glu
 980 985 990
 Glu Gln Gln Gln His Leu Tyr Lys Arg Tyr Ser Val Glu Met Ser Ile
 995 1000 1005
 Arg His Leu Lys Lys Thr Glu Leu Leu Ser Lys Val Glu Ala Leu Lys
 1010 1015 1020
 Lys Gly Gly Val Leu Leu Pro Asn Asp Leu Leu Glu Lys Val Asp Ser
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 Ile Asn Glu Lys Trp Glu Leu Leu Gly Val Phe Ala Phe Leu Leu Leu
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 <212> DNA
 <213> Homo sapiens

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<210> 199

<211> 828

<212> PRT

<213> Homo sapiens

<400> 199

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Gly Ile Glu Asn Lys Ala Phe Asp Arg Asn Thr Glu Ser Leu Phe Glu
              20              25              30

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Glu Leu Ser Ser Ala Gly Ser Gly Leu Ile Gly Asp Val Asp Glu Gly
              35              40              45

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Ala Asp Leu Leu Gly Met Gly Arg Glu Val Glu Asn Leu Ile Leu Glu
              50              55              60

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Asn Thr Gln Leu Leu Glu Thr Lys Asn Ala Leu Asn Ile Val Lys Asn
              65              70              75              80

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Asp Leu Ile Ala Lys Val Asp Glu Leu Thr Cys Glu Lys Asp Val Leu
              85              90              95

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```

Gln Gly Glu Leu Glu Ala Val Lys Gln Ala Lys Leu Lys Leu Glu Glu
              100             105             110

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```

Lys Asn Arg Glu Leu Glu Glu Glu Leu Arg Lys Ala Arg Ala Glu Ala
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Glu Asp Ala Gly Gln Lys Ala Lys Asp Asp Asp Asp Ser Asp Ile Pro
              130             135             140

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Thr Ala Gln Arg Lys Arg Phe Thr Arg Val Glu Met Ala Arg Val Leu
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Met Glu Arg Asn Gln Tyr Lys Glu Arg Leu Met Glu Leu Gln Glu Ala
              165             170             175

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 195 200 205
 Ser Ser Ser Ser Asn Thr Thr Lys Lys Pro Glu Pro Pro Val Asn Leu
 210 215 220
 Lys Tyr Asn Ala Pro Thr Ser His Val Thr Pro Ser Val Lys Lys Arg
 225 230 235 240
 Ser Ser Thr Leu Ser Gln Leu Pro Gly Asp Lys Ser Lys Ala Phe Asp
 245 250 255
 Phe Leu Ser Glu Glu Thr Glu Ala Ser Leu Ala Ser Arg Arg Glu Gln
 260 265 270
 Lys Arg Glu Gln Tyr Arg Gln Val Lys Ala His Val Gln Lys Glu Asp
 275 280 285
 Gly Arg Val Gln Ala Phe Gly Trp Ser Leu Pro Gln Lys Tyr Lys Gln
 290 295 300
 Val Thr Asn Gly Gln Gly Glu Asn Lys Met Lys Asn Leu Pro Val Pro
 305 310 315 320
 Val Tyr Leu Arg Pro Leu Asp Glu Lys Asp Thr Ser Met Lys Leu Trp
 325 330 335
 Cys Ala Val Gly Val Asn Leu Ser Gly Gly Lys Thr Arg Asp Gly Gly
 340 345 350
 Ser Val Val Gly Ala Ser Val Phe Tyr Lys Asp Val Ala Gly Leu Asp
 355 360 365
 Thr Glu Gly Ser Lys Gln Arg Ser Ala Ser Gln Ser Ser Leu Asp Lys
 370 375 380
 Leu Asp Gln Glu Leu Lys Glu Gln Gln Lys Glu Leu Lys Asn Gln Glu
 385 390 395 400
 Glu Leu Ser Ser Leu Val Trp Ile Cys Thr Ser Thr His Ser Ala Thr
 405 410 415
 Lys Val Leu Ile Ile Asp Ala Val Gln Pro Gly Asn Ile Leu Asp Ser
 420 425 430
 Phe Thr Val Cys Asn Ser His Val Leu Cys Ile Ala Ser Val Pro Gly
 435 440 445
 Ala Arg Glu Thr Asp Tyr Pro Ala Gly Glu Asp Leu Ser Glu Ser Gly
 450 455 460
 Gln Val Asp Lys Ala Ser Leu Cys Gly Ser Met Thr Ser Asn Ser Ser
 465 470 475 480
 Ala Glu Thr Asp Ser Leu Leu Gly Gly Ile Thr Val Val Gly Cys Ser
 485 490 495

Ala Glu Gly Val Thr Gly Ala Ala Thr Ser Pro Ser Thr Asn Gly Ala
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 Ser Pro Val Met Asp Lys Pro Pro Glu Met Glu Ala Glu Asn Ser Glu
 515 520 525
 Val Asp Glu Asn Val Pro Thr Ala Glu Glu Ala Thr Glu Ala Thr Glu
 530 535 540
 Gly Asn Ala Gly Ser Ala Glu Asp Thr Val Asp Ile Ser Gln Thr Gly
 545 550 555 560
 Val Tyr Thr Glu His Val Phe Thr Asp Pro Leu Gly Val Gln Ile Pro
 565 570 575
 Glu Asp Leu Ser Pro Val Tyr Gln Ser Ser Asn Asp Ser Asp Ala Tyr
 580 585 590
 Lys Asp Gln Ile Ser Val Leu Pro Asn Glu Gln Asp Leu Val Arg Glu
 595 600 605
 Glu Ala Gln Lys Met Ser Ser Leu Leu Pro Thr Met Trp Leu Gly Ala
 610 615 620
 Gln Asn Gly Cys Leu Tyr Val His Ser Ser Val Ala Gln Trp Arg Lys
 625 630 635 640
 Cys Leu His Ser Ile Lys Leu Lys Asp Ser Ile Leu Ser Ile Val His
 645 650 655
 Val Lys Gly Ile Val Leu Val Ala Leu Ala Asp Gly Thr Leu Ala Ile
 660 665 670
 Phe His Arg Gly Val Asp Gly Gln Trp Asp Leu Ser Asn Tyr His Leu
 675 680 685
 Leu Asp Leu Gly Arg Pro His His Ser Ile Arg Cys Met Thr Val Val
 690 695 700
 His Asp Lys Val Trp Cys Gly Tyr Arg Asn Lys Ile Tyr Val Val Gln
 705 710 715 720
 Pro Lys Ala Met Lys Ile Glu Lys Ser Phe Asp Ala His Pro Arg Lys
 725 730 735
 Glu Ser Gln Val Arg Gln Leu Ala Trp Val Gly Asp Gly Val Trp Val
 740 745 750
 Ser Ile Arg Leu Asp Ser Thr Leu Arg Leu Tyr His Ala His Thr Tyr
 755 760 765
 Gln His Leu Gln Asp Val Asp Ile Glu Pro Tyr Val Ser Lys Met Leu
 770 775 780
 Gly Thr Gly Lys Leu Gly Phe Ser Phe Val Arg Ile Thr Ala Leu Met
 785 790 795 800
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<400> 276
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<210> 280

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 20 25 30

Lys Ala Gly Ala Thr Pro Ser Ser Leu Phe Ser Thr Gln His Gln Ala


35 40 45
Leu Ser Arg His Pro Ile Asn His Cys
50 55

Applicant's or agent's file reference 1290.1001010	International application No. PCT/US 00/25135
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**INDICATIONS RELATING TO DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on pages <u>333</u> , line <u>35</u> to <u>36</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution AMERICAN TYPE CULTURE COLLECTION	
Address of depositary institution (including postal code and country) American Type Culture Collection (ATCC) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit see Attachment A	Accession Number see Attachment A
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input checked="" type="checkbox"/>	
In respect of those designations for which a European patent is sought, the Applicant(s) hereby informs the International Bureau that the Applicant wishes that, until the publication of the mention of the grant of a European patent or for 20 years from the date of filing if the application is refused or withdrawn or deemed to be withdrawn, the biological material deposited with the American Type Culture Collection under Accession No. <u>see Attachment A</u>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<p>For receiving Office use only</p> <p><input checked="" type="checkbox"/> This sheet was received with the international application</p> <p>Authorized officer </p>	<p>For International Bureau use only</p> <p><input type="checkbox"/> This sheet was received by the International Bureau on:</p> <p>Authorized officer</p>
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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
(Additional Sheet)

C. ADDITIONAL INDICATIONS (Continued)

shall be made available as provided in ~~Rule 28(3) EPC only~~ by the issue of a sample to an expert nominated by the requester (Rule 28(4) EPC).

In respect of the designation of Australia in the subject PCT application, and in accordance with Regulation 3.25(3) of the Australian Patents Regulations, the Applicant hereby gives notice that the furnishing of a sample of the biological material deposited with the American Type Culture Collection under Accession No. ~~Attachment A~~ shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention and who is nominated in a request for the furnishing of a sample.

In respect of the designation of Canada in the subject PCT application, the Applicant hereby informs the International Bureau that the Applicant wishes that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the biological material deposited with the American Type Culture Collection under Accession No. ~~Attachment A~~ and referred to in the application to an independent expert nominated by the Commissioner.

Attachment A

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Deposit of Clones

Clones AX65_22, BD335_14, BG241_1, BL187_4, BL249_18, BO71_1, BO365_2, BV51_1, BV140_3, BV141_2, CC194_4, and DA136_11 were deposited on October 3, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98196, from which each clone comprising a particular polynucleotide is obtainable.

Clones AR415_4, AS63_29, BG160_1, BO432_4, BO538_2, BR595_4, CI490_2, CI522_1, CN238_1, CO390_1, and AY304_1 (an additional isolate of clone AY304_14) were deposited on October 25, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98232, from which each clone comprising a particular polynucleotide is obtainable. Clone AY304_14 was deposited on October 23, 1997 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and was given the accession number 98561.

Clones AJ20_2, AR440_1, AS164_1, AX8_1, BD176_3, BD339_1, BD427_1, BL229_22, BV123_16, and CH377_1 were deposited on November 15, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98261, from which each clone comprising a particular polynucleotide is obtainable.

Clones BD441_1, BD441_2, BG102_3, BK158_1, BP163_1, BZ16_3, CC182_1, CG109_1 and CJ397_1 were deposited on November 20, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98264, from which each clone comprising a particular polynucleotide is obtainable.

Clones AM795_4, AT340_1, BG132_1, BG219_2, BG366_2, BV172_2, CC247_10, CI480_9, CO722_1, and CT748_2 were deposited on December 5, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98271, from which each clone comprising a particular polynucleotide is obtainable.

Clones AJ1_1, AQ73_3, BG142_1, BV66_1, BV291_3, CK201_1, CQ331_2, CT550_1, CT585_1 and CT797_3 were deposited on December 13, 1996 with the ATCC

Attachment A

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(American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98278, from which each clone comprising a particular polynucleotide is obtainable.

Clones CB107_1, CG300_3, CJ145_1, CJ160_11, CO20_1, CO223_1, CO310_2, CP258_3, CW1155_3 and CZ247_2 were deposited on December 17, 1996 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98279, from which each clone comprising a particular polynucleotide is obtainable. Clone CO223_3 was deposited on January 9, 1997 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and was given the accession number 98291.

Clones AM666_1, BN387_3, BQ135_2, CR678_1, CW420_2, CW795_2, CW823_3, DF989_3, DL162_2, DL162_1, and EC172_1 were deposited on January 10, 1997 with the ATCC (American Type Culture Collection, 10801 University Boulevard, Manassas, Virginia 20110-2209 U.S.A.) as an original deposit under the Budapest Treaty and were given the accession number 98292, from which each clone comprising a particular polynucleotide is obtainable.

INTERNATIONAL SEARCH REPORT

International Application No

US 00/25135

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/12 C07K14/47 C12N1/21 C12N5/10 C12Q1/68
A61K38/17

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, STRAND

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,L	<p>WO 98 17687 A (GENETICS INST) 30 April 1998 (1998-04-30) the document throws doubt on the priority of the application abstract; claims 20-22 see SEQ ID NO: 8 and 9 (pp.73-77) page 18, line 30 -page 20, line 2 page 23, line 12 -page 24, line 14 page 31, line 12 -page 64, line 16 -----</p>	1-11

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

14 December 2000

Date of mailing of the international search report

30.01.01

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Oderwald, H

INTERNATIONAL SEARCH REPORT

national application No.
PCT/US 00/25135

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-11

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-11

An isolated polynucleotide comprising SEQ ID NO: 41 which encodes a protein of SEQ ID NO: 42 (BG160_1). A host cell, a process for producing said protein, a protein produced by said process, a composition comprising said protein.

2. Claims: 12, 13

An isolated polynucleotide comprising SEQ ID NO: 129. A protein encoded by said polynucleotide having amino acid sequence SEQ ID NO: 130 (C0722_1).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

F US 00/25135

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9817687 A	30-04-1998	AU 5004097 A EP 0960199 A	15-05-1998 01-12-1999

each of such sequences may act as a transmembrane domain should that leader/signal sequence not be separated from the remainder of the AM795_4 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AM795_4 should be approximately 1900 bp.

5 The nucleotide sequence disclosed herein for AM795_4 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. AM795_4 demonstrated at least some similarity with sequences identified as AF002700 (Homo sapiens GDNF family receptor alpha 2 (GFRalpha2) mRNA, complete cds), H05619 (yl70a10.s1 Homo sapiens cDNA clone 43207 3'), U46493 (Cloning vector pFlp recombina

10 se gene, complete cds), U59486 (Rattus norvegicus GDNF receptor alpha mRNA, complete cds), V00248 (Human Ret ligand retL2 cDNA), W73633 (zd55h01.s1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 344593 3', mRNA sequence), and W73681 (zd55h01.r1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 344593 5', mRNA sequence). The predicted amino acid sequence disclosed herein for AM795_4 was searched against the GenPept

15 and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted AM795_4 protein demonstrated at least some similarity to sequences identified as AF002700 (GDNF family receptor alpha 2 (GFRalpha2) [Homo sapiens]), U59486 (GDNF receptor alpha [Rattus norvegicus]), and W37460 (Human Ret ligand retL2 cDNA). A receptor complex comprised of TrnR1 (GDNFR alpha) and Ret was found to be capable of mediating both GDNF

20 and NTN signaling. The receptor called TrnR2, identified based on homology to TrnR1, is 48% identical to TrnR1 and is encoded by a gene located on the short arm of chromosome 8. TrnR2 is attached to the cell surface via a GPI-linkage, and can mediate both NTN and GDNF signaling through Ret *in vitro* (Baloh *et al.*, 1997, *Neuron* 18(5): 793-802, which is incorporated by reference herein). Based upon sequence similarity, AM795_4 proteins and each similar protein

25 or peptide may share at least some activity.

AM795_4 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 76 kDa was detected in conditioned media fractions using SDS polyacrylamide gel electrophoresis.

30 Clone "AT340_1"

A polynucleotide of the present invention has been identified as clone "AT340_1". AT340_1 was isolated from a human adult blood (lymphocytes and dendritic cells treated with mixed lymphocyte reaction) cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or

35 transmembrane protein on the basis of computer analysis of the amino acid sequence of the

for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CJ397_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CJ397_1 protein").

5 The nucleotide sequence of the 5' portion of CJ397_1 as presently determined is reported in SEQ ID NO:107. An additional internal nucleotide sequence from CJ397_1 as presently determined is reported in SEQ ID NO:108. What applicants believe is the proper reading frame and the predicted amino acid sequence encoded by such internal sequence is reported in SEQ ID NO:109. Additional nucleotide sequence from the 3' portion of CJ397_1, including a poly(A)
10 tail, is reported in SEQ ID NO:110.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CJ397_1 should be approximately 1900 bp.

The nucleotide sequence disclosed herein for CJ397_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
15 protocols. CJ397_1 demonstrated at least some similarity with sequences identified as H18685 (yn52b08.s1 Homo sapiens cDNA clone 172023 3'), H46001 (yo13f06.s1 Homo sapiens cDNA clone 177827 3'), and T77612 (yc91f06.r1 Homo sapiens cDNA clone 23298 5'). Based upon sequence similarity, CJ397_1 proteins and each similar protein or peptide may share at least some activity.

20

Clone "AM795_4"

A polynucleotide of the present invention has been identified as clone "AM795_4". AM795_4 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified
25 as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AM795_4 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AM795_4 protein").

The nucleotide sequence of AM795_4 as presently determined is reported in SEQ ID NO:111, and includes a poly(A) tail. What applicants presently believe to be the proper reading
30 frame and the predicted amino acid sequence of the AM795_4 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:112. Amino acids 9 to 21 of SEQ ID NO:112 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 22. Amino acids 138 to 150 of SEQ ID NO:112 are a possible leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid
35 151. Due to the hydrophobic nature of the predicted and the possible leader/signal sequences,

sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CC182_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CC182_1 should be approximately 1600 bp.

5 The nucleotide sequence disclosed herein for CC182_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CC182_1 demonstrated at least some similarity with sequences identified as H61159 (yu37f08.s1 Homo sapiens cDNA clone 236007 3' similar to contains L1 repetitive element), L09709 (Human lysosomal-associated membrane glycoprotein-2 (LAMP2) gene, 5' end of CDS
10 and flanking region), W44797 (zb98e10.s1 Soares parathyroid tumor NbHPA Homo sapiens cDNA clone 320874 3' similar to contains Alu repetitive element), and X62167 (H.sapiens mRNA for P2 protein of peripheral myelin). Based upon sequence similarity, CC182_1 proteins and each similar protein or peptide may share at least some activity. The nucleotide sequence of CC182_1 indicates that it may contain an L1 repetitive element and/or a MER42C repetitive element.

15

Clone "CG109_1"

A polynucleotide of the present invention has been identified as clone "CG109_1". CG109_1 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
20 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CG109_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CG109_1 protein").

The nucleotide sequence of CG109_1 as presently determined is reported in SEQ ID NO:105, and includes a poly(A) tail. What applicants presently believe to be the proper reading
25 frame and the predicted amino acid sequence of the CG109_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:106.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CG109_1 should be approximately 600 bp.

The nucleotide sequence disclosed herein for CG109_1 was searched against the GenBank
30 and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database.

Clone "CJ397_1"

A polynucleotide of the present invention has been identified as clone "CJ397_1".
35 CJ397_1 was isolated from a human fetal brain cDNA library using methods which are selective

reported in SEQ ID NO:102. Additional nucleotide sequence from the 5' portion of BZ16_3 is reported in SEQ ID NO:100.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BZ16_3 should be approximately 2120 bp.

5 The nucleotide sequence disclosed herein for BZ16_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BZ16_3 demonstrated at least some similarity with sequences identified as F06886 (H. sapiens partial cDNA sequence; clone c-1nf02), F06870 (H. sapiens partial cDNA sequence; clone c-1nc11), N53511 (yz26b08.s1 Homo sapiens cDNA clone 284151 3'), T65313 (yc79g12.s1
10 Homo sapiens cDNA clone 22132 3'), U00084 (Haemophilus influenzae), W44815 (zc21d01.s1 Soares senescent fibroblasts NbHSF Homo sapiens cDNA clone 322945 3'), and Z49128 (Caenorhabditis elegans cosmid M03C11). The predicted amino acid sequence disclosed herein for BZ16_3 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BZ16_3 protein demonstrated at least some
15 similarity to sequences identified as D26185 (cell division protein [Bacillus subtilis]), L46096 (HEAHI1465_1 cell division protein [Haemophilus influenzae]), and Z49128 (CEM03C11_5 M03C11.5 [Caenorhabditis elegans]). The BZ16_3 protein demonstrated at least some similarity to ATP-dependent proteases such as ftsH. Based upon sequence similarity, BZ16_3 proteins and each similar protein or peptide may share at least some activity.

20

Clone "CC182_1"

A polynucleotide of the present invention has been identified as clone "CC182_1". CC182_1 was isolated from a human adult brain cDNA library using methods which are selective
25 for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CC182_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CC182_1 protein").

The nucleotide sequence of CC182_1 as presently determined is reported in SEQ ID
30 NO:103, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CC182_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:104. Amino acids 26 to 38 of SEQ ID NO:104 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 39. Due to the hydrophobic nature of the predicted leader/signal

of the encoded protein. BP163_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BP163_1 protein").

The nucleotide sequence of the 5' portion of BP163_1 as presently determined is reported in SEQ ID NO:97. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:98. The predicted amino acid sequence of the BP163_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:98. Additional nucleotide sequence from the 3' portion of BP163_1, including a poly(A) tail, is reported in SEQ ID NO:99.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BP163_1 should be approximately 1240 bp.

The nucleotide sequence disclosed herein for BP163_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BP163_1 demonstrated at least some similarity with sequences identified as AA187086 (zp58h06.r1 Stratagene endothelial cell 937223 Homo sapiens cDNA clone 624443 5' similar to TR G285943 G285943 ORF, COMPLETE CDS), AA301506 (EST14475 Testis tumor Homo sapiens cDNA 5' end similar to hypothetical protein (GB D14659)), D14659 (Human mRNA for KIAA0103 gene, complete cds), and W57328 (ma26d10.r1 Life Tech mouse brain Mus musculus cDNA clone). The predicted amino acid sequence disclosed herein for BP163_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BP163_1 protein demonstrated at least some similarity to sequences identified as D14659 (KIAA0103 [Homo sapiens]). Based upon sequence similarity, BP163_1 proteins and each similar protein or peptide may share at least some activity.

Clone "BZ16_3"

A polynucleotide of the present invention has been identified as clone "BZ16_3". BZ16_3 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BZ16_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BZ16_3 protein").

The partial nucleotide sequence of BZ16_3, including its 3' end and a poly(A) tail, as presently determined is reported in SEQ ID NO:101. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:102. The predicted amino acid sequence of the BZ16_3 protein corresponding to the foregoing nucleotide sequence is

peptide may share at least some activity. The nucleotide sequence of BG102_3 indicates that it may contain an L1 repetitive element.

BG102_3 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 55 kDa was detected in conditioned medium using SDS polyacrylamide gel
5 electrophoresis.

Clone "BK158_1"

A polynucleotide of the present invention has been identified as clone "BK158_1". BK158_1 was isolated from a human adult retina cDNA library using methods which are selective
10 for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BK158_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BK158_1 protein").

The nucleotide sequence of BK158_1 as presently determined is reported in SEQ ID
15 NO:95, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BK158_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:96.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BK158_1 should be approximately 1150 bp.

20 The nucleotide sequence disclosed herein for BK158_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BK158_1 demonstrated at least some similarity with sequences identified as N39195 (yv26e08.s1 Homo sapiens cDNA clone 243878 3') and N45263 (yv26e08.r1 Homo sapiens cDNA clone 243878 5'). Based upon sequence similarity, BK158_1 proteins and each similar
25 protein or peptide may share at least some activity.

BK158_1 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 28 kDa was detected in conditioned medium and membrane fractions using SDS polyacrylamide gel electrophoresis.

Clone "BP163_1"

30 A polynucleotide of the present invention has been identified as clone "BP163_1". BP163_1 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence

X61615 (leukemia inhibitory factor receptor [Homo sapiens]). Based upon sequence similarity, BD441_2 proteins and each similar protein or peptide may share at least some activity.

Clone "BG102_3"

5 A polynucleotide of the present invention has been identified as clone "BG102_3". BG102_3 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BG102_3 is a full-length clone, including the entire coding sequence of
10 a secreted protein (also referred to herein as "BG102_3 protein").

The nucleotide sequence of BG102_3 as presently determined is reported in SEQ ID NO:93, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BG102_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:94. Amino acids 11 to 23 of SEQ ID
15 NO:94 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 24. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the BG102_3 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
20 BG102_3 should be approximately 1100 bp.

The nucleotide sequence disclosed herein for BG102_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BG102_3 demonstrated at least some similarity with sequences identified as AC002078 (Human BAC clone RG111H14 from 7q22, complete sequence), L11910 (Human retinoblastoma susceptibility gene exons 1-27, complete cds), U62317 (Chromosome 22q13 BAC Clone CIT987SK-384D8 complete sequence), Z54147 (Human DNA sequence from cosmid L129H7, Huntington's Disease Region, chromosome 4p16.3 contains CpG island), Z75747 (Human DNA sequence from cosmid U96H1, between markers DXS366 and DXS87 on chromosome X *), and Z80899 (Human DNA sequence from cosmid F1121 on chromosome 6).
25 The predicted amino acid sequence disclosed herein for BG102_3 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BG102_3 protein demonstrated at least some similarity to sequences identified as M13100 (unknown protein [Rattus norvegicus]) and U15647 (reverse transcriptase [Mus musculus]). Based upon sequence similarity, BG102_3 proteins and each similar protein or
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acid sequence of the encoded protein. BD441_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BD441_1 protein").

The nucleotide sequence of the 5' portion of BD441_1 as presently determined is reported in SEQ ID NO:86. An additional internal nucleotide sequence from BD441_1 as presently
5 determined is reported in SEQ ID NO:87. What applicants believe is the proper reading frame and the predicted amino acid sequence encoded by such internal sequence is reported in SEQ ID NO:88. Additional nucleotide sequence from the 3' portion of BD441_1, including a poly(A) tail, is reported in SEQ ID NO:89.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
10 BD441_1 should be approximately 2400 bp.

The predicted amino acid sequence disclosed herein for BD441_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BD441_1 protein demonstrated at least some similarity to sequences identified as X61615 (leukemia inhibitory factor receptor [Homo sapiens]). Based upon sequence similarity,
15 BD441_1 proteins and each similar protein or peptide may share at least some activity.

Clone "BD441_2"

A polynucleotide of the present invention has been identified as clone "BD441_2". BD441_2 was isolated from a human fetal kidney cDNA library using methods which are
20 selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BD441_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BD441_2 protein").

The nucleotide sequence of the 5' portion of BD441_2 as presently determined is reported
25 in SEQ ID NO:90. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:91. The predicted amino acid sequence of the BD441_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:91. Additional nucleotide sequence from the 3' portion of BD441_2, including a poly(A) tail, is reported in SEQ ID NO:92.

30 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BD441_2 should be approximately 1200 bp.

The predicted amino acid sequence disclosed herein for BD441_2 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BD441_2 protein demonstrated at least some similarity to sequences identified as

cDNA clone 198030 3'), U91321 (Human chromosome 16p13 BAC clone CIT987SK-363E6, complete sequence), and Z82200 (Human DNA sequence from clone J333E231). Based upon sequence similarity, BV123_16 proteins and each similar protein or peptide may share at least some activity.

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Clone "CH377_1"

A polynucleotide of the present invention has been identified as clone "CH377_1". CH377_1 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CH377_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CH377_1 protein").

The nucleotide sequence of CH377_1 as presently determined is reported in SEQ ID NO:84, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CH377_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:85. Amino acids 5 to 17 of SEQ ID NO:85 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 18. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CH377_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CH377_1 should be approximately 570 bp.

The nucleotide sequence disclosed herein for CH377_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CH377_1 demonstrated at least some similarity with sequences identified as AA507382 (nh73b01.s1 NCI_CGAP_Br1.1 Homo sapiens cDNA clone IMAGE 964105) and N70479 (za74f12.s1 Homo sapiens cDNA clone 298319 3'). Based upon sequence similarity, CH377_1 proteins and each similar protein or peptide may share at least some activity.

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Clone "BD441_1"

A polynucleotide of the present invention has been identified as clone "BD441_1". BD441_1 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino

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acid sequence of the encoded protein. BL229_22 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BL229_22 protein").

The nucleotide sequence of the 5' portion of BL229_22 as presently determined is reported in SEQ ID NO:79. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:80. The predicted amino acid sequence of the BL229_22 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:80. Additional nucleotide sequence from the 3' portion of BL229_22, including a poly(A) tail, is reported in SEQ ID NO:81.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BL229_22 should be approximately 870 bp.

The nucleotide sequence disclosed herein for BL229_22 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database.

Clone "BV123_16"

A polynucleotide of the present invention has been identified as clone "BV123_16". BV123_16 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BV123_16 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BV123_16 protein").

The nucleotide sequence of BV123_16 as presently determined is reported in SEQ ID NO:82, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BV123_16 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:83.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BV123_16 should be approximately 1080 bp.

The nucleotide sequence disclosed herein for BV123_16 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BV123_16 demonstrated at least some similarity with sequences identified as H29610 (ym61e03.s1 Homo sapiens cDNA clone 52653 3'), H52374 (yq81b12.r1 Homo sapiens cDNA clone 202175 5'), H66213 (yu16h10.s1 Homo sapiens cDNA), L08092 (Homo sapiens dystrophin (DMD) gene, intron 7, transposon-like sequence), L35670 (Homo sapiens (subclone H8 10_g5 from P1 35 H5 C8) DNA sequence), M62716 (Human CSP-B gene flanking sequence), N46985 (yy83a05.s1 Homo sapiens cDNA clone 280112 3'), R94603 (yq38a04.s1 Homo sapiens

clone), U21730 Human 5'-nucleotidase (CD73)), W01979 (za30h09.r1 Soares fetal liver spleen 1NFLS Homo sapiens cDNA clone 294113 5'), and W02015 (za32b11.r1 Soares fetal liver spleen 1NFLS Homo sapiens cDNA clone 294237 5'). Based upon sequence similarity, BD339_1 proteins and each similar protein or peptide may share at least some activity. The TopPredII
5 computer program predicts three potential transmembrane domains within the BD339_1 protein sequence, centered around amino acids 14, 46, and 76 of SEQ ID NO:76, respectively.

Clone "BD427_1"

A polynucleotide of the present invention has been identified as clone "BD427_1".
10 BD427_1 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BD427_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BD427_1 protein").
15 The nucleotide sequence of BD427_1 as presently determined is reported in SEQ ID NO:77, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BD427_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:78.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
20 BD427_1 should be approximately 1810 bp.

The nucleotide sequence disclosed herein for BD427_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BD427_1 demonstrated at least some similarity with sequences identified as BD427_1 demonstrated at least some similarity with sequences identified as AA027122 (zk04a03.r1 Soares
25 pregnant uterus NbHPU Homo sapiens cDNA clone 469516 5'), N24735 (yx56b02.s1 Homo sapiens cDNA clone 265707 3'), and W84644 (zd91a06.r1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 356818 5'). Based upon sequence similarity, BD427_1 proteins and each similar protein or peptide may share at least some activity.

Clone "BL229_22"

A polynucleotide of the present invention has been identified as clone "BL229_22". BL229_22 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino

leader/signal sequence not be separated from the remainder of the BD176_3 protein. Additional nucleotide sequence from the 3' portion of BD176_3, including a poly(A) tail, is reported in SEQ ID NO:74.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
5 BD176_3 should be approximately 1300 bp.

The nucleotide sequence disclosed herein for BD176_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BD176_3 demonstrated at least some similarity with sequences identified as AA029679 (ze94g10.r1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 366690 5'),
10 D45913 (Mouse NLRR-1 mRNA for leucine-rich-repeat protein, complete cds), R55610 (yg88h08.r1 Homo sapiens cDNA clone 40606 5'), and T07640 (EST05530 Homo sapiens cDNA clone HFBEM16). The predicted amino acid sequence disclosed herein for BD176_3 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BD176_3 protein demonstrated at least some similarity to
15 sequences identified as D45913 (leucine-rich-repeat protein [Mus musculus]) and M59472 (asparagine-rich antigen Pfa55-6 [Plasmodium falciparum]). Based upon sequence similarity, BD176_3 proteins and each similar protein or peptide may share at least some activity.

Clone "BD339_1"

20 A polynucleotide of the present invention has been identified as clone "BD339_1". BD339_1 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BD339_1 is a full-length clone, including the entire coding
25 sequence of a secreted protein (also referred to herein as "BD339_1 protein").

The nucleotide sequence of BD339_1 as presently determined is reported in SEQ ID NO:75, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BD339_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:76.

30 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BD339_1 should be approximately 650 bp.

The nucleotide sequence disclosed herein for BD339_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BD339_1 demonstrated at least some similarity with sequences identified as H82422
35 (yu80d08.s1 Homo sapiens cDNA clone 240111 3), N62058 (EST53c05 Homo sapiens cDNA

of the encoded protein. AX8_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AX8_1 protein").

The nucleotide sequence of AX8_1 as presently determined is reported in SEQ ID NO:70, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and
5 the predicted amino acid sequence of the AX8_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:71. Amino acids 106 to 118 of SEQ ID NO:71 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 119. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated
10 from the remainder of the AX8_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AX8_1 should be approximately 2300 bp.

The nucleotide sequence disclosed herein for AX8_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
15 protocols. No hits were found in the database. The TopPredII computer program predicts three potential transmembrane domains within the AX8_1 protein sequence, centered around amino acids 111, 144, and 182 of SEQ ID NO:71, respectively.

AX8_1 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 35 kDa was detected in conditioned medium and membrane fractions using
20 SDS polyacrylamide gel electrophoresis.

Clone "BD176_3"

A polynucleotide of the present invention has been identified as clone "BD176_3". BD176_3 was isolated from a human fetal kidney cDNA library using methods which are
25 selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BD176_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BD176_3 protein").

The nucleotide sequence of the 5' portion of BD176_3 as presently determined is reported
30 in SEQ ID NO:72. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:73. The predicted amino acid sequence of the BD176_3 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:73. Amino acids 2 to 14 of SEQ ID NO:73 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 15. Due to the hydrophobic nature of the predicted
35 leader/signal sequence, it is likely to act as a transmembrane domain should the predicted

A polynucleotide of the present invention has been identified as clone "AS164_1". AS164_1 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AS164_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AS164_1 protein").

The nucleotide sequence of AS164_1 as presently determined is reported in SEQ ID NO:68, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the AS164_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:69.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AS164_1 should be approximately 1600 bp.

The nucleotide sequence disclosed herein for AS164_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. AS164_1 demonstrated at least some similarity with sequences identified as H24668 (yl40h10.r1 Homo sapiens cDNA clone 160771 5'), N29757 (yw90h10.s1 Homo sapiens cDNA clone 259555 3'), T62184 (yb96d08.r1 Homo sapiens cDNA clone 79023 5'), Z69706 (Human DNA sequence from cosmid COS12 from a contig from the tip of the short arm of chromosome 16, spanning 2Mb of 16p13.3. Contains ESTs, Flanking sequences of 3' alpha globin H), and Z69890 (Human DNA sequence from cosmid RJ14 from a contig from the tip of the short arm of chromosome 16, spanning 2Mb of 16p13.3. Contains ESTs and CpG island). The predicted amino acid sequence disclosed herein for AS164_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted AS164_1 protein demonstrated at least some similarity to sequences identified as A20359_1 (ryanodine receptor gene product [Homo sapiens]) and U78866 (putative arginine-aspartate-rich RNA binding protein [Arabidopsis thaliana]). Based upon sequence similarity, AS164_1 proteins and each similar protein or peptide may share at least some activity. The predicted AS164_1 protein sequence also contains repeated Asp-Arg RNA-binding motifs.

30 Clone "AX8_1"

A polynucleotide of the present invention has been identified as clone "AX8_1". AX8_1 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence

region is indicated in SEQ ID NO:63. The predicted amino acid sequence of the AJ20_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:63. Amino acids 8 to 20 of SEQ ID NO:63 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 21. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the AJ20_2 protein. Additional nucleotide sequence from the 3' portion of AJ20_2, including a poly(A) tail, is reported in SEQ ID NO:64.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AJ20_2 should be approximately 850 bp.

The nucleotide sequence disclosed herein for AJ20_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database.

15 Clone "AR440_1"

A polynucleotide of the present invention has been identified as clone "AR440_1". AR440_1 was isolated from a human adult retina cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AR440_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AR440_1 protein").

The partial nucleotide sequence of AR440_1, including its 3' end and a poly(A) tail, as presently determined is reported in SEQ ID NO:66. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:67. The predicted amino acid sequence of the AR440_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:67. Additional nucleotide sequence from the 5' portion of AR440_1 is reported in SEQ ID NO:65.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AR440_1 should be approximately 1400 bp.

The nucleotide sequence disclosed herein for AR440_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. No hits were found in the database. The nucleotide sequence of AR440_1 indicates that it may contain an Alu repetitive element.

35 Clone "AS164_1"

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CO390_1 should be approximately 2300 bp.

The nucleotide sequence disclosed herein for CO390_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CO390_1 demonstrated at least some similarity with sequences identified as H84353 (yv85a11.r1 Homo sapiens cDNA clone 249500 5'), L35532 (Pan troglodytes Alu repeat region), N80616 (Genomic clone encoding SAP(Phe)), R53922 (yi03h10.s1 Homo sapiens cDNA clone 138211 3' similar to contains Alu repetitive element; contains TAR1 repetitive element), X75335 (H.sapiens Alu insertion in COL3A1 gene), X95882 (R.norvegicus mRNA for ATP ligand gated ion channel), and Y09561 (H.sapiens mRNA for P2X7 receptor). The predicted amino acid sequence disclosed herein for CO390_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CO390_1 protein demonstrated at least some sequence similarity with sequences identified as U45448 (P2x1 receptor [Homo sapiens]), W04216 (Rat superior cervical ganglion p2x receptor), X83688 (ATP receptor [Homo sapiens]), X95882 (P2X7 gene product [Rattus norvegicus]), and Y09561 (ATP receptor [Homo sapiens]). Based upon sequence similarity, CO390_1 proteins and each homologous protein or peptide may share at least some activity. The TopPredII computer program predicts a potential transmembrane domain within the CO390_1 protein sequence, centered around amino acid 249 of SEQ ID NO:61. The nucleotide sequence of CO390_1 may contain an Alu repetitive element.

CO390_1 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 75 kDa was detected in conditioned medium using SDS polyacrylamide gel electrophoresis.

Clone "AJ20_2"

A polynucleotide of the present invention has been identified as clone "AJ20_2". AJ20_2 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AJ20_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AJ20_2 protein").

The nucleotide sequence of the 5' portion of AJ20_2 as presently determined is reported in SEQ ID NO:62. What applicants presently believe is the proper reading frame for the coding

The nucleotide sequence of CN238_1 as presently determined is reported in SEQ ID NO:58, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the CN238_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:59.

5 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CN238_1 should be approximately 2190 bp.

 The nucleotide sequence disclosed herein for CN238_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CN238_1 demonstrated at least some similarity with sequences identified as
10 AA044097 (zk51b02.r1 Soares pregnant uterus NbHPU Homo sapiens cDNA clone 486315 5'),
AA044287 (zk51b02.s1 Soares pregnant uterus NbHPU Homo sapiens cDNA clone 486315 3'),
AA045440 (zk67c03.s1 Soares pregnant uterus NbHPU Homo sapiens cDNA clone 487876 3'),
AA143007 (zl48f01.r1 Soares pregnant uterus NbHPU Homo sapiens cDNA clone 505177 5'),
D51196 (Human fetal brain cDNA 3'-end GEN-016G05), D60310 (Human fetal brain cDNA
15 3'-end GEN-098A09), N69344 (yz43e04.s1 Homo sapiens cDNA clone 285822 3' similar to
gb:K00558 TUBULIN ALPHA-1 CHAIN (HUMAN)), W22250 (64B8 Human retina cDNA
Tsp509I-cleaved sublibrary Homo), and X01703 (Human gene for alpha-tubulin (b alpha 1)). The
predicted amino acid sequence disclosed herein for CN238_1 was searched against the GenPept
and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted
20 CN238_1 protein demonstrated at least some sequence similarity with sequences identified as
K00557 (alpha-tubulin [Homo sapiens]) and U51583 (zinc finger homeodomain enhancer-binding
protein-1 [Rattus norvegicus]). Based upon sequence similarity, CN238_1 proteins and each
homologous protein or peptide may share at least some activity.

25 Clone "CO390_1"

 A polynucleotide of the present invention has been identified as clone "CO390_1".
CO390_1 was isolated from a human adult brain cDNA library using methods which are selective
for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence
30 of the encoded protein. CO390_1 is a full-length clone, including the entire coding sequence of
a secreted protein (also referred to herein as "CO390_1 protein").

 The nucleotide sequence of CO390_1 as presently determined is reported in SEQ ID
NO:60, and includes a poly(A) tail. What applicants presently believe to be the proper reading
frame and the predicted amino acid sequence of the CO390_1 protein corresponding to the
35 foregoing nucleotide sequence is reported in SEQ ID NO:61.

of the encoded protein. CI522_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CI522_1 protein").

The nucleotide sequence of the 5' portion of CI522_1 as presently determined is reported in SEQ ID NO:55. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:56. The predicted amino acid sequence of the CI522_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:56. Amino acids 7 to 19 of SEQ ID NO:56 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 20. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CI522_1 protein. Additional nucleotide sequence from the 3' portion of CI522_1, including a poly(A) tail, is reported in SEQ ID NO:57.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CI522_1 should be approximately 1400 bp.

The nucleotide sequence disclosed herein for CI522_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CI522_1 demonstrated at least some similarity with sequences identified as AA028557 (mi18g05.r1 Soares mouse p3NMF19.5 Mus musculus cDNA clone 463928 5'), H32238 (EST107136 Rattus sp. cDNA 5' end), T33525 (EST58140 Homo sapiens cDNA 5' end similar to None), U66468 (Human cell growth regulator CGR11 mRNA, complete cds), and X00525 (Mouse 28S ribosomal RNA). The predicted amino acid sequence disclosed herein for CI522_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CI522_1 protein demonstrated at least some sequence similarity with sequences identified as U66468 (cell growth regulator CGR11 [Homo sapiens]). Based upon sequence similarity, CI522_1 proteins and each homologous protein or peptide may share at least some activity.

Clone "CN238_1"

A polynucleotide of the present invention has been identified as clone "CN238_1". CN238_1 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CN238_1 includes at least a portion of the coding sequence of a secreted protein (also referred to herein as "CN238_1 protein").

foregoing nucleotide sequence is reported in SEQ ID NO:54. Amino acids 64 to 76 of SEQ ID NO:54 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 77. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CI490_2 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CI490_2 should be approximately 1200 bp.

The nucleotide sequence disclosed herein for CI490_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CI490_2 demonstrated at least some similarity with sequences identified as H30751 (yo79a04.r1 Homo sapiens cDNA clone 184110 5'), H49766 (yo24f01.r1 Homo sapiens cDNA clone 178873 5' similar to SP:S19586 N-METHYL-D-ASPARTATE RECEPTOR GLUTAMATE-BINDING CHAIN), H51158 (yo32d04.r1 Homo sapiens cDNA clone 179623 5'), R85211 (yo41d11.s1 Homo sapiens cDNA clone 180501 3' similar to SP S19586 N-METHYL-D-ASPARTATE RECEPTOR GLUTAMATE-BINDING CHAIN), S19586 (N-METHYL-D-ASPARTATE RECEPTOR GLUTAMATE-BINDING CHAIN), S61973 (NMDA receptor glutamate-binding subunit [rat, mRNA]), T01031 (Human leucine zipper protein-kinase cDNA sequence), and W56893 (zc01g05.r1 Soares parathyroid tumor NbHPA Homo sapiens cDNA clone 321080 5' similar to PIR S19586 S19586 N-methyl-D-aspartate receptor glutamate-binding chain - rat). The predicted amino acid sequence disclosed herein for CI490_2 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CI490_2 protein demonstrated at least some sequence similarity with sequences identified as S61973 (NMDA receptor glutamate-binding subunit [Rattus sp.]) and U08020 (collagen pro-alpha-1 type I chain [Mus musculus]). Based upon sequence similarity, CI490_2 proteins and each homologous protein or peptide may share at least some activity. The TopPredII computer program predicts six potential transmembrane domains within the CI490_2 protein sequence, with the most amino-terminal transmembrane domain centered around amino acid 77 of SEQ ID NO:54.

30 Clone "CI522_1"

A polynucleotide of the present invention has been identified as clone "CI522_1". CI522_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence

Clone "BR595_4"

A polynucleotide of the present invention has been identified as clone "BR595_4". BR595_4 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
5 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BR595_4 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BR595_4 protein").

The nucleotide sequence of the 5' portion of BR595_4 as presently determined is reported in SEQ ID NO:50. What applicants presently believe is the proper reading frame for the coding
10 region is indicated in SEQ ID NO:51. The predicted amino acid sequence of the BR595_4 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:51. Additional nucleotide sequence from the 3' portion of BR595_4, including a poly(A) tail, is reported in SEQ ID NO:52.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
15 BR595_4 should be approximately 3000 bp.

The nucleotide sequence disclosed herein for BR595_4 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BR595_4 demonstrated at least some similarity with sequences identified as AA443742 (zw95b02.s1 Soares total fetus Nb2HF8 9w Homo sapiens cDNA clone 784683 3'),
20 AA600820 (np45b08.s1 NCI_CGAP_Br1.1 Homo sapiens cDNA clone IMAGE:1129239), T19410 (Human gene signature HUMGS00435), W87465 (zh67c04.s1 Soares fetal liver spleen INFLS S1 Homo sapiens cDNA clone 417126 3'), and Z33587 (H. sapiens partial cDNA sequence; clone HEA89P; single read). Based upon sequence similarity, BR595_4 proteins and each homologous protein or peptide may share at least some activity.

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Clone "CI490_2"

A polynucleotide of the present invention has been identified as clone "CI490_2". CI490_2 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
30 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. CI490_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CI490_2 protein").

The nucleotide sequence of CI490_2 as presently determined is reported in SEQ ID NO:53, and includes a poly(A) tail. What applicants presently believe to be the proper reading
35 frame and the predicted amino acid sequence of the CI490_2 protein corresponding to the

computer program predicts a potential transmembrane domain at the amino terminus of the BO432_4 protein sequence. The BO432_4 protein may also contain the bacterial lysR family signature, a motif found in bacterial transcriptional regulators and which is possibly indicative of a helix-turn-helix structure.

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Clone "BO538_2"

A polynucleotide of the present invention has been identified as clone "BO538_2". BO538_2 was isolated from a human adult retina cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
10 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BO538_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BO538_2 protein").

The nucleotide sequence of the 5' portion of BO538_2 as presently determined is reported in SEQ ID NO:47. What applicants presently believe is the proper reading frame for the coding
15 region is indicated in SEQ ID NO:48. The predicted amino acid sequence of the BO538_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:48. Additional nucleotide sequence from the 3' portion of BO538_2, including a poly(A) tail, is reported in SEQ ID NO:49.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone
20 BO538_2 should be approximately 3000 bp.

The nucleotide sequence disclosed herein for BO538_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BO538_2 demonstrated at least some similarity with sequences identified as AA503100 (ne44h01.s1 NCI_CGAP_Co3 Homo sapiens cDNA clone 900241), R44035
25 (yg21g09.s1 Homo sapiens cDNA clone 33167 3'), T21630 (Human gene signature HUMGS03066), and W64854 (me06d12.r1 Soares mouse embryo NbME13.5 14.5 Mus musculus cDNA clone 386711 5' similar to PIR S40989 S40989 hypothetical protein F55H2.6 - Caenorhabditis elegans). The predicted amino acid sequence disclosed herein for BO538_2 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX
30 search protocol. The predicted BO538_2 protein demonstrated at least some sequence similarity with sequences identified as M60525 (nerve growth factor inducible protein [Rattus norvegicus]), R28916 (Type III procollagen), and Z27080 (F55H2.6 [Caenorhabditis elegans]). Based upon sequence similarity, BO538_2 proteins and each homologous protein or peptide may share at least some activity. The TopPredII computer program predicts two potential transmembrane domains
35 within the BO538_2 protein sequence.

program predicts three potential transmembrane domains within the BG160_1 protein sequence, centered around amino acids 84, 484, and 595 of SEQ ID NO:42, respectively.

BG160_1 protein was expressed in a COS cell expression system, and an expressed protein band of approximately 110 kDa was detected in membrane fractions using SDS polyacrylamide gel electrophoresis.

Clone "BO432_4"

A polynucleotide of the present invention has been identified as clone "BO432_4". BO432_4 was isolated from a human adult retina cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BO432_4 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BO432_4 protein").

The nucleotide sequence of the 5' portion of BO432_4 as presently determined is reported in SEQ ID NO:43. An additional internal nucleotide sequence from BO432_4 as presently determined is reported in SEQ ID NO:44. What applicants believe is the proper reading frame and the predicted amino acid sequence encoded by such internal sequence is reported in SEQ ID NO:45. Additional nucleotide sequence from the 3' portion of BO432_4, including a poly(A) tail, is reported in SEQ ID NO:46.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BO432_4 should be approximately 1700 bp.

The nucleotide sequence disclosed herein for BO432_4 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BO432_4 demonstrated at least some similarity with sequences identified as AA283626 (zt15e09.s1 Soares NbHTGBC Homo sapiens cDNA clone 713224 3'), AA406486 (zv12g02.r1 Soares NhHMPu S1 Homo sapiens cDNA clone 753458 5' similar to WP F35G2.2 CE05809 E.COLI YCAC LIKE), AA570446 (nk62c12.s1 NCI_CGAP_Sch1 Homo sapiens cDNA clone IMAGE:1018102), N55855 (J3389F Homo sapiens cDNA clone J3389 5'), Q10613 (Rianodin receptor gene), T62691 (yc70d10.r1 Homo sapiens cDNA clone 86035 5'), and W90766 (zh79h04.s1 Soares fetal liver spleen 1NFLS S1 Homo sapiens cDNA clone 418327 3'). The predicted amino acid sequence disclosed herein for BO432_4 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BO432_4 protein demonstrated at least some sequence similarity with sequences identified as Z69637 (F35G2.2 [Caenorhabditis elegans]). Based upon sequence similarity, BO432_4 proteins and each homologous protein or peptide may share at least some activity. The TopPredII

A polynucleotide of the present invention has been identified as clone "BG160_1". BG160_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BG160_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BG160_1 protein").

The nucleotide sequence of BG160_1 as presently determined is reported in SEQ ID NO:41, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BG160_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:42. Amino acids 588 to 600 of SEQ ID NO:42 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 601. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the BG160_1 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BG160_1 should be approximately 2300 bp.

The nucleotide sequence disclosed herein for BG160_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BG160_1 demonstrated at least some similarity with sequences identified as A60021 (tropomyosin-related protein, neuronal - rat ;contains element MER27 repetitive element), AA081525 (zn20e02.r1 Stratagene neuroepithelium NT2RAMI 937234 Homo sapiens cDNA clone 547994 5'), AA092565 (ll5773.seq.F Fetal heart, Lambda ZAP Express Homo sapiens cDNA 5'), D56138 (Human fetal brain cDNA 5'-end GEN-416H11), D61090 (Human fetal brain cDNA 5'-end GEN-155A07), D61184 (Human fetal brain cDNA 5'-end GEN-165A01), L10335 (Homo sapiens neuro-endocrine-specific protein C (NSP) mRNA, complete cds), N21304 (yx53f07.s1 Homo sapiens cDNA clone 265477 3' similar to SP:A60021 A60021 TROPOMYOSIN-RELATED PROTEIN, NEURONAL), and W95814 (ze07f11.r1 Soares fetal heart NbHH19W Homo sapiens cDNA clone 358317 5' similar to PIR:A60021). The predicted amino acid sequence disclosed herein for BG160_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BG160_1 protein demonstrated at least some sequence similarity with sequences identified as L10334 (neuroendocrine-specific protein B [Homo sapiens]), L10335 (neuroendocrine-specific protein C [Homo sapiens]). Based upon sequence similarity, BG160_1 proteins and each homologous protein or peptide may share at least some activity. The TopPredII computer

A polynucleotide of the present invention has been identified as clone "AY304_14". AY304_14 was isolated from a human adult retina cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AY304_14 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AY304_14 protein").

The nucleotide sequence of AY304_14 as presently determined is reported in SEQ ID NO:39, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the AY304_14 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:40.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AY304_14 should be approximately 2200 bp.

The nucleotide sequence disclosed herein for AY304_14 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. AY304_14 demonstrated at least some similarity with sequences identified as AA127688 (zk92f05.s1 Soares pregnant uterus NbHPU Homo sapiens cDNA clone 490305 3'), AA179609 (zp49g11.r1 Stratagene HeLa cell s3 937216 Homo sapiens cDNA clone 612836 5'), AA276253 (vc40f05.r1 Barstead MPLRB1 Mus musculus cDNA clone 777057 5'), H15545 (ym27d04.s1 Homo sapiens cDNA clone 49495 3' similar to contains PTR5 repetitive element), L08441 (Human autonomously replicating sequence (ARS) mRNA), N34949 (yy49h09.s1 Homo sapiens cDNA clone 276929 3'), R48594 (yj65d07.s1 Homo sapiens cDNA clone 153613 3'), T21160 (Human gene signature HUMGS02466), U43284 (Cloning vector phGFP-S65T, complete sequence, green fluorescent protein (gfp) gene, complete cds), and Z45151 (H. sapiens partial cDNA sequence; clone c-2hh04). The predicted amino acid sequence disclosed herein for AY304_14 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted AY304_14 protein demonstrated at least some sequence similarity with sequences identified as D86984 (similar to yeast adenylate cyclase (S56776) [Homo sapiens]), J01415 (cytochrome oxidase subunit 3 [Homo sapiens]), V00662 (cytochrome oxidase III [Homo sapiens]), and X68948 (envelope glycoprotein [Spleen focus-forming virus]). Based upon sequence similarity, AY304_14 proteins and each homologous protein or peptide may share at least some activity. The TopPredII computer program predicts two potential transmembrane domains within the AY304_14 protein sequence, one centered around amino acid 81 and another around amino acid 120 of SEQ ID NO:40.

Clone "AS63_29"

A polynucleotide of the present invention has been identified as clone "AS63_29". AS63_29 was isolated from a human fetal brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
5 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AS63_29 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AS63_29 protein").

The nucleotide sequence of the 5' portion of AS63_29 as presently determined is reported in SEQ ID NO:36. What applicants presently believe is the proper reading frame for the coding
10 region is indicated in SEQ ID NO:37. The predicted amino acid sequence of the AS63_29 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:37. Amino acids 28 to 40 of SEQ ID NO:37 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 41. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted
15 leader/signal sequence not be separated from the remainder of the AS63_29 protein. Additional nucleotide sequence from the 3' portion of AS63_29, including a poly(A) tail, is reported in SEQ ID NO:38.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AS63_29 should be approximately 1700 bp.

20 The nucleotide sequence disclosed herein for AS63_29 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. AS63_29 demonstrated at least some similarity with sequences identified as L26877 (Mus musculus (B20c) heavy chain immunoglobulin variable region gene), T09146 (EST07039 Homo sapiens cDNA clone HIBBP68 5' end), T23466 (seq3050 Homo sapiens cDNA clone
25 Hy18-Ch13-Charon40-cDNA-100 3'), and W55739 (ma35f05.r1 Life Tech mouse brain Mus musculus cDNA clone 312705 5'). The predicted amino acid sequence disclosed herein for AS63_29 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted AS63_29 protein demonstrated at least some sequence similarity with sequences identified as R04032 (Full length T4 encoded by plasmid
30 pBG381). Based upon sequence similarity, AS63_29 proteins and each homologous protein or peptide may share at least some activity. The TopPredII computer program predicts a potential transmembrane domain within the AS63_29 protein sequence, near the amino terminus.

Clone "AY304_14"

of the encoded protein. AR415_4 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AR415_4 protein").

The nucleotide sequence of AR415_4 as presently determined is reported in SEQ ID NO:34, and includes a poly(A) tail. What applicants presently believe to be the proper reading
5 frame and the predicted amino acid sequence of the AR415_4 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:35. Amino acids 14 to 26 of SEQ ID NO:35 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 27. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal
10 sequence not be separated from the remainder of the AR415_4 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AR415_4 should be approximately 1500 bp.

The nucleotide sequence disclosed herein for AR415_4 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
15 protocols. AR415_4 demonstrated at least some similarity with sequences identified as AA100799 (zm26d01.s1 Stratagene pancreas (#937208) Homo sapiens cDNA clone 526753 3'), AA100852 (zm26d01.r1 Stratagene pancreas (#937208) Homo sapiens cDNA clone 526753 5' similar to SW CO02_HUMAN P19075 TUMOR-ASSOCIATED ANTIGEN CO-029), AA146605 (zo35c09.r1 Stratagene colon (#937204) Homo sapiens cDNA clone 588880 5' similar to
20 SW:CO02_HUMAN P19075 TUMOR-ASSOCIATED ANTIGEN CO-029), AA224847 (nc33c12.s1 NCI CGAP Pr2 Homo sapiens cDNA clone 4079 similar to SW:CO02_HUMAN P19075 TUMOR-ASSOCIATED ANTIGEN CO-029), AA225191 (nc21h08.s1 NCI CGAP Pr1 Homo sapiens cDNA clone 2968), AA593864 (nn19f08.s1 NCI CGAP Co12 Homo sapiens cDNA clone IMAGE:1084359), D26483 (Mouse mRNA for PE31/TALLA), M33680 (Human
25 26-kDa cell surface protein TAPA-1 mRNA, complete cds), T14726 (Human CD53 antigen cDNA), and T23814 (Human gene signature HUMGS05723). The predicted amino acid sequence disclosed herein for AR415_4 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted AR415_4 protein demonstrated at least some sequence similarity with sequences identified as D29808 (TALLA-1
30 [Homo sapiens]), M35252 (tumor-associated antigen [Homo sapiens]), and R22360 (CO-029 tumour associated antigen protein). Based upon sequence similarity, AR415_4 proteins and each homologous protein or peptide may share at least some activity. The TopPredII computer program predicts a potential transmembrane domain within the AR415_4 protein sequence centered around amino acid 100 of SEQ ID NO:35.

selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. DA136_11 includes at least a portion of the coding sequence of a secreted protein (also referred to herein as "DA136_11 protein").

5 The nucleotide sequence of DA136_11 as presently determined is reported in SEQ ID NO:32, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the DA136_11 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:33.

10 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone DA136_11 should be approximately 3800 bp.

 The nucleotide sequence disclosed herein for DA136_11 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. DA136_11 demonstrated at least some similarity with sequences identified as AA523414 (ng30a07.s1 NCI_CGAP_Co3 Homo sapiens cDNA clone 936276), H89334
15 (yw25h09.r1 Homo sapiens cDNA clone 253313 5'), R59925 (yh11b12.s1 Homo sapiens cDNA clone 42891 3), T66165 (Human interleukin-12 receptor alpha chain NR4 DNA), Y09328 (H.sapiens mRNA for IL13 receptor alpha-1 chain), and Y10659 (H.sapiens IL-13Ra mRNA). The predicted amino acid sequence disclosed herein for DA136_11 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX
20 search protocol. The predicted DA136_11 protein demonstrated at least some similarity to sequences identified as L08960 (cell adhesion molecule [Gallus gallus]), M34083 (lactogen receptor precursor [Rattus norvegicus]), M59941 (GM-CSF receptor beta chain [Homo sapiens]), W09822 (Human interleukin-12 receptor alpha chain NR4), X61178 (interleukin-5 receptor type 3 [Homo sapiens]), and Y10659 (IL-13Ra [Homo sapiens]).
25 Based upon sequence similarity, DA136_11 proteins and each similar protein or peptide may share at least some activity. The TopPredII computer program predicts a potential transmembrane domain within the DA136_11 protein sequence, centered around amino acid 215 of SEQ ID NO:33.

30 Clone "AR415_4"

 A polynucleotide of the present invention has been identified as clone "AR415_4". AR415_4 was isolated from a human adult retina cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence

of the encoded protein. CC194_4 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "CC194_4 protein").

The nucleotide sequence of the 5' portion of CC194_4 as presently determined is reported in SEQ ID NO:29. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:30. The predicted amino acid sequence of the CC194_4 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:30. Amino acids 88 to 100 of SEQ ID NO:30 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 101. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the CC194_4 protein. Additional nucleotide sequence from the 3' portion of CC194_4, including a poly(A) tail, is reported in SEQ ID NO:31.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone CC194_4 should be approximately 3300 bp.

The nucleotide sequence disclosed herein for CC194_4 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. CC194_4 demonstrated at least some similarity with sequences identified as AA722214 (zh20f10.s1 Soares pineal gland N3HPG Homo sapiens cDNA clone 412651 3', mRNA sequence), H11476 (ym10h08.s1 Homo sapiens cDNA clone 47781 3'), H11581 (ym10h08.r1 Soares infant brain 1NIB Homo sapiens cDNA clone IMAGE:47781 5' similar to SP:C36E8.3 CE00911; mRNA sequence), H23044 (ym51d07.r1 Homo sapiens cDNA clone 52058 5' similar to SP:C36E8.3 CE00911), N93789 (zb64g05.s1 Soares fetal lung NbHL19W Homo sapiens cDNA clone 308408 3'), and W54544 (mc99a01.r1 Soares mouse embryo NbME13.5 14.5 Mus musculus). The predicted amino acid sequence disclosed herein for CC194_4 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted CC194_4 protein demonstrated at least some similarity to sequences identified as M38561 (CAD [Homo sapiens]). Based upon sequence similarity, CC194_4 proteins and each similar protein or peptide may share at least some activity.

Clone "DA136_11"

A polynucleotide of the present invention has been identified as clone "DA136_11". DA136_11 was isolated from a human adult placenta cDNA library using methods which are

The nucleotide sequence disclosed herein for BV140_3 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BV140_3 demonstrated at least some similarity with sequences identified as H72799 (yu07d10.r1 Homo sapiens cDNA clone 233107 5') and T94057 (ye33g08.r1 Homo sapiens cDNA clone 119582 5'). Based upon sequence similarity, BV140_3 proteins and each similar protein or peptide may share at least some activity.

Clone "BV141_2"

A polynucleotide of the present invention has been identified as clone "BV141_2". BV141_2 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BV141_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BV141_2 protein").

The nucleotide sequence of BV141_2 as presently determined is reported in SEQ ID NO:27, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BV141_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:28.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BV141_2 should be approximately 1100 bp.

The nucleotide sequence disclosed herein for BV141_2 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BV141_2 demonstrated at least some similarity with sequences identified as L26860 (Mus musculus (C6e) heavy chain immunoglobulin variable region gene). Based upon sequence similarity, BV141_2 proteins and each similar protein or peptide may share at least some activity. The TopPredII computer program predicts two potential transmembrane domains within the BV141_2 protein sequence, one centered around amino acid 34 and another around amino acid 65 of SEQ ID NO:28. The nucleotide sequence of BV141_2 indicates that it may contain one or more of the following repetitive element(s): L1 repeat.

Clone "CC194_4"

A polynucleotide of the present invention has been identified as clone "CC194_4". CC194_4 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence

The nucleotide sequence of the 5' portion of BV51_1 as presently determined is reported in SEQ ID NO:20. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:21. The predicted amino acid sequence of the BV51_1 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:21. Additional
5 nucleotide sequence from the 3' portion of BV51_1, including a poly(A) tail, is reported in SEQ ID NO:22.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BV51_1 should be approximately 970 bp.

The nucleotide sequence disclosed herein for BV51_1 was searched against the GenBank
10 and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BV51_1 demonstrated at least some similarity with sequences identified as AB012130 (Homo sapiens SBC2 mRNA for sodium bicarbonate cotransporter2, complete cds) and U46493 (Cloning vector pFlp recombinase gene, complete cds). The predicted amino acid sequence disclosed herein for BV51_1 was searched against the GenPept and GeneSeq amino acid
15 sequence databases using the BLASTX search protocol. The predicted BV51_1 protein demonstrated at least some similarity to sequences identified as AB01213 (sodium bicarbonate cotransporter2 [Homo sapiens]). Based upon sequence similarity, BV51_1 proteins and each similar protein or peptide may share at least some activity.

20 Clone "BV140_3"

A polynucleotide of the present invention has been identified as clone "BV140_3". BV140_3 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence
25 of the encoded protein. BV140_3 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BV140_3 protein").

The nucleotide sequence of the 5' portion of BV140_3 as presently determined is reported in SEQ ID NO:23. An additional internal nucleotide sequence from BV140_3 as presently determined is reported in SEQ ID NO:24. What applicants believe is the proper reading frame
30 and the predicted amino acid sequence encoded by such internal sequence is reported in SEQ ID NO:25. Additional nucleotide sequence from the 3' portion of BV140_3, including a poly(A) tail, is reported in SEQ ID NO:26.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BV140_3 should be approximately 3500 bp.

Clone "BO365_2"

A polynucleotide of the present invention has been identified as clone "BO365_2". BO365_2 was isolated from a human adult retina cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
5 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BO365_2 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BO365_2 protein").

The nucleotide sequence of BO365_2 as presently determined is reported in SEQ ID NO:18, and includes a poly(A) tail. What applicants presently believe to be the proper reading
10 frame and the predicted amino acid sequence of the BO365_2 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:19.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BO365_2 should be approximately 2800 bp.

The nucleotide sequence disclosed herein for BO365_2 was searched against the GenBank
15 and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BO365_2 demonstrated at least some similarity with sequences identified as D63876 (Human mRNA for KIAA0154 gene, partial cds) and Z83844 (Human DNA sequence *** SEQUENCING IN PROGRESS *** from clone 37E16; HTGS phase 1). The predicted amino acid sequence disclosed herein for BO365_2 was searched against the GenPept and
20 GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BO365_2 protein demonstrated at least some similarity to sequences identified as D10250 (alpha-fetoprotein enhancer binding protein [Homo sapiens]), D63876 (KIAA0154 gene product is related to mouse gamma adaptin [Homo sapiens]), and R23962 (AFP-1). Based upon sequence similarity, BO365_2 proteins and each similar protein or peptide may share at least
25 some activity. The TopPredII computer program predicts three potential transmembrane domains within the BO365_2 protein sequence, centered around amino acids 70, 140, and 180 of SEQ ID NO:19, respectively.

Clone "BV51_1"

A polynucleotide of the present invention has been identified as clone "BV51_1". BV51_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
30 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BV51_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BV51_1 protein").
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testis NHT Homo sapiens cDNA clone 726611 5'), R82633 (yj20a05.s1 Homo sapiens cDNA clone 149264 3'), and T22047 (Human gene signature HUMGS03590). The predicted amino acid sequence disclosed herein for BL249_18 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted

5 BL249_18 protein demonstrated at least some similarity to sequences identified as AC003673 (unknown protein (AAC09020.1) [Arabidopsis thaliana]) and Z98598 (hypothetical protein [Schizosaccharomyces pombe]). Based upon sequence similarity, BL249_18 proteins and each similar protein or peptide may share at least some activity. The TopPredII computer program predicts two potential transmembrane domains within the BL249_18 protein sequence, one

10 centered around amino acid 45 and another around amino acid 680 of SEQ ID NO:13.

Clone "BO71_1"

A polynucleotide of the present invention has been identified as clone "BO71_1". BO71_1 was isolated from a human adult retina cDNA library using methods which are selective

15 for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BO71_1 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BO71_1 protein").

The nucleotide sequence of the 5' portion of BO71_1 as presently determined is reported

20 in SEQ ID NO:14. An additional internal nucleotide sequence from BO71_1 as presently determined is reported in SEQ ID NO:15. What applicants believe is the proper reading frame and the predicted amino acid sequence encoded by such internal sequence is reported in SEQ ID NO:16. Additional nucleotide sequence from the 3' portion of BO71_1, including a poly(A) tail, is reported in SEQ ID NO:17.

25 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BO71_1 should be approximately 2000 bp.

The nucleotide sequence disclosed herein for BO71_1 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BO71_1 demonstrated at least some similarity with sequences identified as X86809

30 (H.sapiens mRNA for major astrocytic phosphoprotein PEA-15). The predicted amino acid sequence disclosed herein for BO71_1 was searched against the GenPept and GeneSeq amino acid sequence databases using the BLASTX search protocol. The predicted BO71_1 protein demonstrated at least some similarity to sequences identified as U06144 (cellular disintegrin-related protein [Mus musculus]). Based upon sequence similarity, BO71_1

35 proteins and each similar protein or peptide may share at least some activity.

sequence databases using the BLASTX search protocol. The predicted BL187_4 protein demonstrated at least some similarity to sequences identified as R95242 (HIC-1 polypeptide), Z19002 (kruppel-like zinc finger protein [Homo sapiens]), and a number of other zinc-finger proteins. Based upon sequence similarity, BL187_4 proteins and each similar protein or peptide may share at least some activity. Motifs analysis indicates the presence of two zinc-finger (C2H2 type) domains centered around amino acids 375 and 430 of SEQ ID NO:11, respectively. The TopPredII computer program predicts two potential transmembrane domains within the BL187_4 protein sequence, one centered around amino acid 30 and another around amino acid 260 of SEQ ID NO:11. BL187_4 protein appears to be a novel secreted or membrane-associated zinc-finger protein.

Clone "BL249_18"

A polynucleotide of the present invention has been identified as clone "BL249_18". BL249_18 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BL249_18 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BL249_18 protein").

The nucleotide sequence of BL249_18 as presently determined is reported in SEQ ID NO:12, and includes a poly(A) tail. What applicants presently believe to be the proper reading frame and the predicted amino acid sequence of the BL249_18 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:13. Amino acids 32 to 44 of SEQ ID NO:13 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 45. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the BL249_18 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BL249_18 should be approximately 2300 bp.

The nucleotide sequence disclosed herein for BL249_18 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BL249_18 demonstrated at least some similarity with sequences identified as AA034864 (mi53f01.r1 Soares mouse embryo NbME13.5 14.5 Mus musculus cDNA clone 467257 5'), AA115100 (zl02h12.s1 Soares pregnant uterus NbHPU Homo sapiens cDNA clone 491207 3'), AA219365 (zr04c06.r1 Stratagene NT2 neuronal precursor 937230 Homo sapiens cDNA clone 650506 5'), AA399095 (zt59b06.r1 Soares

least some similarity to sequences identified as Y12781 (transducin (beta) like 1 protein [Homo sapiens]) and other beta-transducin-like proteins (see GenBank accession numbers L28125 and T86738). Based upon sequence similarity, BG241_1 proteins and each similar protein or peptide may share at least some activity.

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Clone "BL187_4"

A polynucleotide of the present invention has been identified as clone "BL187_4". BL187_4 was isolated from a human adult testes cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding
10 a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BL187_4 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BL187_4 protein").

The nucleotide sequence of BL187_4 as presently determined is reported in SEQ ID NO:10, and includes a poly(A) tail. What applicants presently believe to be the proper reading
15 frame and the predicted amino acid sequence of the BL187_4 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:11. Amino acids 17 to 29 of SEQ ID NO:11 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 30. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal
20 sequence not be separated from the remainder of the BL187_4 protein.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BL187_4 should be approximately 2300 bp.

The nucleotide sequence disclosed herein for BL187_4 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search
25 protocols. BL187_4 demonstrated at least some similarity with sequences identified as AA476210 (zw35g01.s1 Soares ovary tumor NbHOT Homo sapiens cDNA clone 771312 3', mRNA sequence), AA868505 (ak43b04.s1 Soares testis NHT Homo sapiens cDNA clone IMAGE 1408687 3' similar to SW PLZF_HUMAN Q05516 ZINC FINGER PROTEIN PLZF; mRNA sequence), AA927876 (om18b09.s1 Soares NFL T GBC S1
30 Homo sapiens cDNA clone IMAGE:1541369 3', mRNA sequence), AD000671 (Homo sapiens DNA from chromosome 19-cosmid f24109 containing HRX2, genomic sequence), H48938 (EST0010 Homo sapiens cDNA clone HTN-6-15), and Z63958 (H.sapiens CpG DNA, clone 93d10, forward read cpg93d10.ft1a). The predicted amino acid sequence disclosed herein for BL187_4 was searched against the GenPept and GeneSeq amino acid

frame and the predicted amino acid sequence of the BD335_14 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:5.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BD335_14 should be approximately 3000 bp.

5 The nucleotide sequence disclosed herein for BD335_14 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. The predicted BD335_14 protein demonstrated at least some similarity with sequences identified as U83511 (APXL [Homo sapiens]). Based upon sequence similarity, BD335_14 proteins and each homologous protein or peptide may share at least some activity. The
10 TopPredII computer program predicts three potential transmembrane domains within the BD335_14 protein sequence, one centered around amino acid 80, another around amino acid 320, and a third around amino acid 700 of SEQ ID NO:5.

Clone "BG241_1"

15 A polynucleotide of the present invention has been identified as clone "BG241_1". BG241_1 was isolated from a human adult brain cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BG241_1 is a full-length clone, including the entire coding sequence of
20 a secreted protein (also referred to herein as "BG241_1 protein").

 The nucleotide sequence of the 5' portion of BG241_1 as presently determined is reported in SEQ ID NO:6. An additional internal nucleotide sequence from BG241_1 as presently determined is reported in SEQ ID NO:7. What applicants believe is the proper reading frame and the predicted amino acid sequence encoded by such internal sequence is reported in SEQ ID NO:8.
25 Additional nucleotide sequence from the 3' portion of BG241_1, including a poly(A) tail, is reported in SEQ ID NO:9.

 The EcoRI/NotI restriction fragment obtainable from the deposit containing clone BG241_1 should be approximately 800 bp.

 The nucleotide sequence disclosed herein for BG241_1 was searched against the GenBank
30 and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. BG241_1 demonstrated at least some similarity with sequences identified as AI082187 (ox75f01.x1 Soares_NhHMPu_S1 Homo sapiens cDNA clone IMAGE 1662169 3' similar to contains element MSR1 repetitive element; mRNA sequence), W38781 (zb27g08.r1 Soares parathyroid tumor NbHPA Homo sapiens), and Y12781 (Homo sapiens
35 mRNA for transducin (beta) like 1 protein). The predicted BG241_1 protein demonstrated at

a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. AX65_22 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "AX65_22 protein").

The nucleotide sequence of the 5' portion of AX65_22 as presently determined is reported in SEQ ID NO:1. What applicants presently believe is the proper reading frame for the coding region is indicated in SEQ ID NO:2. The predicted amino acid sequence of the AX65_22 protein corresponding to the foregoing nucleotide sequence is reported in SEQ ID NO:2. Amino acids 8 to 20 of SEQ ID NO:2 are a predicted leader/signal sequence, with the predicted mature amino acid sequence beginning at amino acid 21. Due to the hydrophobic nature of the predicted leader/signal sequence, it is likely to act as a transmembrane domain should the predicted leader/signal sequence not be separated from the remainder of the AX65_22 protein. Additional nucleotide sequence from the 3' portion of AX65_22, including a poly(A) tail, is reported in SEQ ID NO:3.

The EcoRI/NotI restriction fragment obtainable from the deposit containing clone AX65_22 should be approximately 3500 bp.

The nucleotide sequence disclosed herein for AX65_22 was searched against the GenBank and GeneSeq nucleotide sequence databases using BLASTN/BLASTX and FASTA search protocols. AX65_22 demonstrated at least some similarity with sequences identified as T08476 (Eukaryotic expression vector pAPEX-3p) and U46493 (Cloning vector pFlp recombinase gene, complete cds). The predicted AX65_22 protein demonstrated at least some homology with sequences identified as J01969 (DNA polymerase [Human adenovirus type 5]), R07640 (Deduced protein sequence of p170-2 comprising T4), and X57205 (fibroblast growth factor receptor [Homo sapiens]). Based upon sequence similarity, AX65_22 proteins and each similar protein or peptide may share at least some activity.

Clone "BD335_14"

A polynucleotide of the present invention has been identified as clone "BD335_14". BD335_14 was isolated from a human fetal kidney cDNA library using methods which are selective for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding a secreted or transmembrane protein on the basis of computer analysis of the amino acid sequence of the encoded protein. BD335_14 is a full-length clone, including the entire coding sequence of a secreted protein (also referred to herein as "BD335_14 protein").

The nucleotide sequence of BD335_14 as presently determined is reported in SEQ ID NO:4, and includes a poly(A) tail. What applicants presently believe to be the proper reading

The protein produced according to such methods is also provided by the present invention.

Protein compositions of the present invention may further comprise a pharmaceutically acceptable carrier. Compositions comprising an antibody which specifically reacts with such protein are also provided by the present invention.

- 5 Methods are also provided for preventing, treating or ameliorating a medical condition which comprises administering to a mammalian subject a therapeutically effective amount of a composition comprising a protein of the present invention and a pharmaceutically acceptable carrier.

10 **BRIEF DESCRIPTION OF THE DRAWINGS**

Figures 1A and 1B are schematic representations of the pED6 and pNOTs vectors, respectively, used for deposit of clones disclosed herein.

DETAILED DESCRIPTION

15 **ISOLATED PROTEINS AND POLYNUCLEOTIDES**

- Nucleotide and amino acid sequences, as presently determined, are reported below for each clone and protein disclosed in the present application. The nucleotide sequence of each clone can readily be determined by sequencing of the deposited clone in accordance with known methods. The predicted amino acid sequence (both full-length and mature forms) can then be
20 determined from such nucleotide sequence. The amino acid sequence of the protein encoded by a particular clone can also be determined by expression of the clone in a suitable host cell, collecting the protein and determining its sequence. For each disclosed protein applicants have identified what they have determined to be the reading frame best identifiable with sequence information available at the time of filing.

- 25 As used herein a "secreted" protein is one which, when expressed in a suitable host cell, is transported across or through a membrane, including transport as a result of signal sequences in its amino acid sequence. "Secreted" proteins include without limitation proteins secreted wholly (e.g., soluble proteins) or partially (e.g., receptors) from the cell in which they are expressed. "Secreted" proteins also include without limitation proteins which are transported
30 across the membrane of the endoplasmic reticulum.

Clone "AX65_22"

- A polynucleotide of the present invention has been identified as clone "AX65_22". AX65_22 was isolated from a human adult testes cDNA library using methods which are selective
35 for cDNAs encoding secreted proteins (see U.S. Pat. No. 5,536,637), or was identified as encoding

nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:198 from nucleotide 2130 to nucleotide 2600, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:198 from nucleotide 2130 to nucleotide 2600. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence
5 corresponding to the cDNA sequence of SEQ ID NO:198 from nucleotide 1 to nucleotide 506, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:198 from nucleotide 1 to nucleotide 506, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:198 from nucleotide 1 to nucleotide 506.

In other embodiments, the present invention provides a composition comprising a protein,
10 wherein said protein comprises an amino acid sequence selected from the group consisting of:
(a) the amino acid sequence of SEQ ID NO:199;
(b) the amino acid sequence of SEQ ID NO:199 from amino acid 1 to amino acid 130;
(c) a fragment of the amino acid sequence of SEQ ID NO:199, the fragment
15 comprising eight contiguous amino acids of SEQ ID NO:199; and
(d) the amino acid sequence encoded by the cDNA insert of clone EC172_1 deposited with the ATCC under accession number 98292;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:199 or the amino acid sequence of SEQ ID
20 NO:199 from amino acid 1 to amino acid 130. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:199 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:199, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:199 having biological activity,
25 the fragment comprising the amino acid sequence from amino acid 409 to amino acid 418 of SEQ ID NO:199.

In certain preferred embodiments, the polynucleotide is operably linked to an expression control sequence. The invention also provides a host cell, including bacterial, yeast, insect and mammalian cells, transformed with such polynucleotide compositions. Also provided by the
30 present invention are organisms that have enhanced, reduced, or modified expression of the gene(s) corresponding to the polynucleotide sequences disclosed herein.

Processes are also provided for producing a protein, which comprise:

- (a) growing a culture of the host cell transformed with such polynucleotide compositions in a suitable culture medium; and
35
- (b) purifying the protein from the culture.

- (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- 5 (aa) SEQ ID NO:198, but excluding the poly(A) tail at the 3' end of SEQ ID NO:198; and
- (ab) the nucleotide sequence of the cDNA insert of clone EC172_1 deposited with the ATCC under accession number 98292;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- 10 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
- 15 consisting of:
- (ba) SEQ ID NO:198, but excluding the poly(A) tail at the 3' end of SEQ ID NO:198; and
- (bb) the nucleotide sequence of the cDNA insert of clone EC172_1 deposited with the ATCC under accession number 98292;
- 20 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).
- Preferably the polynucleotide isolated according to the above process comprises a nucleotide
- 25 sequence corresponding to the cDNA sequence of SEQ ID NO:198, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:198 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:198, but excluding the poly(A) tail at the 3' end of SEQ ID NO:198. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:198
- 30 from nucleotide 117 to nucleotide 2600, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:198 from nucleotide 117 to nucleotide 2600, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:198 from nucleotide 117 to nucleotide 2600. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of
- 35 SEQ ID NO:198 from nucleotide 2130 to nucleotide 2600, and extending contiguously from a

(j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:199 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:199;

5 (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;

(l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

10 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:198.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:198 from nucleotide 117 to nucleotide 2600; the nucleotide sequence of SEQ ID NO:198 from
15 nucleotide 2130 to nucleotide 2600; the nucleotide sequence of SEQ ID NO:198 from nucleotide 1 to nucleotide 506; the nucleotide sequence of the full-length protein coding sequence of clone EC172_1 deposited with the ATCC under accession number 98292; or the nucleotide sequence of a mature protein coding sequence of clone EC172_1 deposited with the ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a
20 mature protein encoded by the cDNA insert of clone EC172_1 deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:199 from amino acid 1 to amino acid 130. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ
25 ID NO:199 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:199, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:199 having biological activity, the fragment comprising the amino acid sequence from amino acid 409 to amino acid 418 of SEQ ID NO:199.

30 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:198.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

- (c) a fragment of the amino acid sequence of SEQ ID NO:197, the fragment comprising eight contiguous amino acids of SEQ ID NO:197; and
- (d) the amino acid sequence encoded by the cDNA insert of clone DL162_2 deposited with the ATCC under accession number 98292;
- 5 the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:197 or the amino acid sequence of SEQ ID NO:197 from amino acid 860 to amino acid 1066. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:197 having biological activity, the fragment preferably comprising eight (more preferably
- 10 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:197, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:197 having biological activity, the fragment comprising the amino acid sequence from amino acid 532 to amino acid 541 of SEQ ID NO:197.
- In one embodiment, the present invention provides a composition comprising an isolated
- 15 polynucleotide selected from the group consisting of:
- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:198;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:198 from nucleotide 117 to nucleotide 2600;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:198
- 20 from nucleotide 2130 to nucleotide 2600;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:198 from nucleotide 1 to nucleotide 506;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone EC172_1 deposited with the ATCC under accession
- 25 number 98292;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone EC172_1 deposited with the ATCC under accession number 98292;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone EC172_1 deposited with the ATCC under accession number
- 30 98292;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone EC172_1 deposited with the ATCC under accession number 98292;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:199;

(ba) SEQ ID NO:196, but excluding the poly(A) tail at the 3' end of SEQ ID NO:196; and

(bb) the nucleotide sequence of the cDNA insert of clone DL162_2 deposited with the ATCC under accession number 98292;

5 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

10 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:196, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:196 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:196, but excluding the poly(A) tail at the 3' end of SEQ ID NO:196. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:196
15 from nucleotide 121 to nucleotide 3345, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:196 from nucleotide 121 to nucleotide 3345, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:196 from nucleotide 121 to nucleotide 3345. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of
20 SEQ ID NO:196 from nucleotide 160 to nucleotide 3345, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:196 from nucleotide 160 to nucleotide 3345, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:196 from nucleotide 160 to nucleotide 3345. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence
25 corresponding to the cDNA sequence of SEQ ID NO:196 from nucleotide 2592 to nucleotide 3318, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:196 from nucleotide 2592 to nucleotide 3318, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:196 from nucleotide 2592 to nucleotide 3318.

30 In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:197;

(b) the amino acid sequence of SEQ ID NO:197 from amino acid 860 to amino acid 1066;

nucleotide 160 to nucleotide 3345; the nucleotide sequence of SEQ ID NO:196 from nucleotide 2592 to nucleotide 3318; the nucleotide sequence of the full-length protein coding sequence of clone DL162_2 deposited with the ATCC under accession number 98292; or the nucleotide sequence of a mature protein coding sequence of clone DL162_2 deposited with the ATCC under
5 accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone DL162_2 deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:197 from amino acid 860 to amino acid 1066. In further preferred embodiments, the present
10 invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:197 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:197, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:197 having biological activity, the fragment comprising the amino acid sequence from
15 amino acid 532 to amino acid 541 of SEQ ID NO:197.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:196.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 20 (a) a process comprising the steps of:
- (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:196, but excluding the poly(A) tail at the 3'
25 end of SEQ ID NO:196; and
 - (ab) the nucleotide sequence of the cDNA insert of clone DL162_2 deposited with the ATCC under accession number 98292;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 30 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in
35 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:196;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:196
5 from nucleotide 121 to nucleotide 3345;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:196
from nucleotide 160 to nucleotide 3345;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:196
from nucleotide 2592 to nucleotide 3318;
- 10 (e) a polynucleotide comprising the nucleotide sequence of the full-length
protein coding sequence of clone DL162_2 deposited with the ATCC under accession
number 98292;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA
insert of clone DL162_2 deposited with the ATCC under accession number 98292;
- 15 (g) a polynucleotide comprising the nucleotide sequence of a mature protein
coding sequence of clone DL162_2 deposited with the ATCC under accession number
98292;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert
of clone DL162_2 deposited with the ATCC under accession number 98292;
- 20 (i) a polynucleotide encoding a protein comprising the amino acid sequence
of SEQ ID NO:197;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino
acid sequence of SEQ ID NO:197 having biological activity, the fragment comprising
eight contiguous amino acids of SEQ ID NO:197;
- 25 (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h)
above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i)
or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of
30 the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of
the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the
length of SEQ ID NO:196.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:196
35 from nucleotide 121 to nucleotide 3345; the nucleotide sequence of SEQ ID NO:196 from

- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:194, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:194 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:194, but excluding the poly(A) tail at the 3' end of SEQ ID NO:194. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:194 from nucleotide 251 to nucleotide 787, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:194 from nucleotide 251 to nucleotide 787, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:194 from nucleotide 251 to nucleotide 787. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:194 from nucleotide 371 to nucleotide 787, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:194 from nucleotide 371 to nucleotide 787, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:194 from nucleotide 371 to nucleotide 787.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:195;
- (b) the amino acid sequence of SEQ ID NO:195 from amino acid 38 to amino acid 170;
- (c) a fragment of the amino acid sequence of SEQ ID NO:195, the fragment comprising eight contiguous amino acids of SEQ ID NO:195; and
- (d) the amino acid sequence encoded by the cDNA insert of clone DL162_1 deposited with the ATCC under accession number 98292;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:195 or the amino acid sequence of SEQ ID NO:195 from amino acid 38 to amino acid 170. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:195 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:195, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:195 having biological activity, the fragment comprising the amino acid sequence from amino acid 84 to amino acid 93 of SEQ ID NO:195.

deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:195 from amino acid 38 to amino acid 170. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a
5 fragment of the amino acid sequence of SEQ ID NO:195 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:195, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:195 having biological activity, the fragment comprising the amino acid sequence from amino acid 84 to amino acid 93 of SEQ ID NO:195.

10 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:194.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - 15 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:194, but excluding the poly(A) tail at the 3' end of SEQ ID NO:194; and
 - 20 (ab) the nucleotide sequence of the cDNA insert of clone DL162_1 deposited with the ATCC under accession number 98292;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
 - 25 and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 30 (ba) SEQ ID NO:194, but excluding the poly(A) tail at the 3' end of SEQ ID NO:194; and
 - (bb) the nucleotide sequence of the cDNA insert of clone DL162_1 deposited with the ATCC under accession number 98292;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions
 - 35 at least as stringent as 4X SSC at 50 degrees C;

- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:194 from nucleotide 251 to nucleotide 787;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:194 from nucleotide 371 to nucleotide 787;
- 5 (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone DL162_1 deposited with the ATCC under accession number 98292;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone DL162_1 deposited with the ATCC under accession number 98292;
- 10 (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone DL162_1 deposited with the ATCC under accession number 98292;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone DL162_1 deposited with the ATCC under accession number 98292;
- 15 (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:195;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:195 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:195;
- 20 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- 25 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:194.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:194 from nucleotide 251 to nucleotide 787; the nucleotide sequence of SEQ ID NO:194 from nucleotide 371 to nucleotide 787; the nucleotide sequence of the full-length protein coding sequence of clone DL162_1 deposited with the ATCC under accession number 98292; or the nucleotide sequence of a mature protein coding sequence of clone DL162_1 deposited with the ATCC under accession number 98292. In other preferred embodiments, the polynucleotide

30 encodes the full-length or a mature protein encoded by the cDNA insert of clone DL162_1

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according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:191, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:191 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:191. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:191 from nucleotide 548 to nucleotide 868, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:191 from nucleotide 548 to nucleotide 868, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:191 from nucleotide 548 to nucleotide 868. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:191 from nucleotide 590 to nucleotide 868, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:191 from nucleotide 590 to nucleotide 868, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:191 from nucleotide 590 to nucleotide 868.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:192;
- (b) the amino acid sequence of SEQ ID NO:192 from amino acid 75 to amino acid 107;
- (c) a fragment of the amino acid sequence of SEQ ID NO:192, the fragment comprising eight contiguous amino acids of SEQ ID NO:192; and
- (d) the amino acid sequence encoded by the cDNA insert of clone DF989_3 deposited with the ATCC under accession number 98292;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:192 or the amino acid sequence of SEQ ID NO:192 from amino acid 75 to amino acid 107. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:192 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:192, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:192 having biological activity, the fragment comprising the amino acid sequence from amino acid 48 to amino acid 57 of SEQ ID NO:192.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:194;

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:191 and SEQ ID NO:193.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 5 (a) a process comprising the steps of:
- (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (aa) SEQ ID NO:191;
- 10 (ab) SEQ ID NO:193, but excluding the poly(A) tail at the 3' end of SEQ ID NO:193; and
- (ac) the nucleotide sequence of the cDNA insert of clone DF989_3 deposited with the ATCC under accession number 98292;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions
- 15 at least as stringent as 4X SSC at 50 degrees C; and
- (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in
- 20 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (ba) SEQ ID NO:191;
- (bb) SEQ ID NO:193, but excluding the poly(A) tail at the 3' end of SEQ ID NO:193; and
- 25 (bc) the nucleotide sequence of the cDNA insert of clone DF989_3 deposited with the ATCC under accession number 98292;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- 30 (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:191 and SEQ ID NO:193, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:191 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:193, but excluding

35 the poly(A) tail at the 3' end of SEQ ID NO:193. Also preferably the polynucleotide isolated

- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone DF989_3 deposited with the ATCC under accession number 98292;
- 5 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone DF989_3 deposited with the ATCC under accession number 98292;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:192;
- 10 (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:192 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:192;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 15 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:191.
- 20 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:191 from nucleotide 548 to nucleotide 868; the nucleotide sequence of SEQ ID NO:191 from nucleotide 590 to nucleotide 868; the nucleotide sequence of the full-length protein coding sequence of clone DF989_3 deposited with the ATCC under accession number 98292; or the nucleotide sequence of a mature protein coding sequence of clone DF989_3 deposited with the
- 25 ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone DF989_3 deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:192 from amino acid 75 to amino acid 107. In further preferred
- 30 embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:192 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:192, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:192 having biological activity, the fragment comprising the
- 35 amino acid sequence from amino acid 48 to amino acid 57 of SEQ ID NO:192.

from nucleotide 401 to nucleotide 589. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:189 from nucleotide 258 to nucleotide 627, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:189 from nucleotide 258 to nucleotide 627, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:189 from nucleotide 258 to nucleotide 627.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:190;
- 10 (b) a fragment of the amino acid sequence of SEQ ID NO:190, the fragment comprising eight contiguous amino acids of SEQ ID NO:190; and
- (c) the amino acid sequence encoded by the cDNA insert of clone CW823_3 deposited with the ATCC under accession number 98292;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:190. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:190 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:190, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:190 having biological activity, the fragment comprising the amino acid sequence from amino acid 26 to amino acid 35 of SEQ ID NO:190.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:191;
- 25 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:191 from nucleotide 548 to nucleotide 868;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:191 from nucleotide 590 to nucleotide 868;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone DF989_3 deposited with the ATCC under accession number 98292;
- 30 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone DF989_3 deposited with the ATCC under accession number 98292;

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:189, but excluding the poly(A) tail at the 3' end of SEQ ID NO:189; and

(ab) the nucleotide sequence of the cDNA insert of clone CW823_3 deposited with the ATCC under accession number 98292;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:189, but excluding the poly(A) tail at the 3' end of SEQ ID NO:189; and

(bb) the nucleotide sequence of the cDNA insert of clone CW823_3 deposited with the ATCC under accession number 98292;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:189, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:189 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:189, but excluding the poly(A) tail at the 3' end of SEQ ID NO:189. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:189 from nucleotide 401 to nucleotide 589, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:189 from nucleotide 401 to nucleotide 589, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:189

- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CW823_3 deposited with the ATCC under accession number 98292;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CW823_3 deposited with the ATCC under accession number 98292;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:190;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:190 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:190;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:189.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:189 from nucleotide 401 to nucleotide 589; the nucleotide sequence of SEQ ID NO:189 from nucleotide 258 to nucleotide 627; the nucleotide sequence of the full-length protein coding sequence of clone CW823_3 deposited with the ATCC under accession number 98292; or the nucleotide sequence of a mature protein coding sequence of clone CW823_3 deposited with the ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CW823_3 deposited with the ATCC under accession number 98292. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:190 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:190, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:190 having biological activity, the fragment comprising the amino acid sequence from amino acid 26 to amino acid 35 of SEQ ID NO:190.
- Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:189.

nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:187 from nucleotide 1 to nucleotide 529, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:187 from nucleotide 1 to nucleotide 529.

In other embodiments, the present invention provides a composition comprising a protein,
5 wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:188;
- (b) the amino acid sequence of SEQ ID NO:188 from amino acid 1 to amino acid 137;
- (c) a fragment of the amino acid sequence of SEQ ID NO:188, the fragment
10 comprising eight contiguous amino acids of SEQ ID NO:188; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CW795_2 deposited with the ATCC under accession number 98292;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:188 or the amino acid sequence of SEQ ID
15 NO:188 from amino acid 1 to amino acid 137. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:188 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:188, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:188 having biological activity,
20 the fragment comprising the amino acid sequence from amino acid 338 to amino acid 347 of SEQ ID NO:188.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:189;
- 25 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:189 from nucleotide 401 to nucleotide 589;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:189 from nucleotide 258 to nucleotide 627;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length
30 protein coding sequence of clone CW823_3 deposited with the ATCC under accession number 98292;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CW823_3 deposited with the ATCC under accession number 98292;

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (aa) SEQ ID NO:187, but excluding the poly(A) tail at the 3' end of SEQ ID NO:187; and

(ab) the nucleotide sequence of the cDNA insert of clone CW795_2 deposited with the ATCC under accession number 98292;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

10 (iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

15 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:187, but excluding the poly(A) tail at the 3' end of SEQ ID NO:187; and

(bb) the nucleotide sequence of the cDNA insert of clone CW795_2 deposited with the ATCC under accession number 98292;

20 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide
25 sequence corresponding to the cDNA sequence of SEQ ID NO:187, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:187 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:187, but excluding the poly(A) tail at the 3' end of SEQ ID NO:187. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:187
30 from nucleotide 119 to nucleotide 2176, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:187 from nucleotide 119 to nucleotide 2176, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:187 from nucleotide 119 to nucleotide 2176. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of
35 SEQ ID NO:187 from nucleotide 1 to nucleotide 529, and extending contiguously from a

(i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:188 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:188;

5 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;

(k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

10 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:187.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:187 from nucleotide 119 to nucleotide 2176; the nucleotide sequence of SEQ ID NO:187 from
15 nucleotide 1 to nucleotide 529; the nucleotide sequence of the full-length protein coding sequence of clone CW795_2 deposited with the ATCC under accession number 98292; or the nucleotide sequence of a mature protein coding sequence of clone CW795_2 deposited with the ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CW795_2 deposited with the
20 ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:188 from amino acid 1 to amino acid 137. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:188 having biological activity, the fragment preferably comprising eight
25 (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:188, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:188 having biological activity, the fragment comprising the amino acid sequence from amino acid 338 to amino acid 347 of SEQ ID NO:188.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
30 NO:187.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

- (a) the amino acid sequence of SEQ ID NO:186;
- (b) the amino acid sequence of SEQ ID NO:186 from amino acid 370 to amino acid 532;
- (c) a fragment of the amino acid sequence of SEQ ID NO:186, the fragment comprising eight contiguous amino acids of SEQ ID NO:186; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CW420_2 deposited with the ATCC under accession number 98292;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:186 or the amino acid sequence of SEQ ID NO:186 from amino acid 370 to amino acid 532. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:186 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:186, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:186 having biological activity, the fragment comprising the amino acid sequence from amino acid 725 to amino acid 734 of SEQ ID NO:186.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:187;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:187 from nucleotide 119 to nucleotide 2176;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:187 from nucleotide 1 to nucleotide 529;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CW795_2 deposited with the ATCC under accession number 98292;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CW795_2 deposited with the ATCC under accession number 98292;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CW795_2 deposited with the ATCC under accession number 98292;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CW795_2 deposited with the ATCC under accession number 98292;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:188;

- (ab) the nucleotide sequence of the cDNA insert of clone CW420_2 deposited with the ATCC under accession number 98292;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- 5 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- 10 (ba) SEQ ID NO:185, but excluding the poly(A) tail at the 3' end of SEQ ID NO:185; and
- (bb) the nucleotide sequence of the cDNA insert of clone CW420_2 deposited with the ATCC under accession number 98292;
- 15 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:185, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:185 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:185, but excluding the poly(A) tail at the 3' end of SEQ ID NO:185. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:185 from nucleotide 116 to nucleotide 4498, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:185 from nucleotide 116 to nucleotide 4498, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:185 from nucleotide 116 to nucleotide 4498. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:185 from nucleotide 1221 to nucleotide 1711, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:185 from nucleotide 1221 to nucleotide 1711, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:185 from nucleotide 1221 to nucleotide 1711.

In other embodiments, the present invention provides a composition comprising a protein,

35 wherein said protein comprises an amino acid sequence selected from the group consisting of:

(j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;

(k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;

5 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:185.

10 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:185 from nucleotide 116 to nucleotide 4498; the nucleotide sequence of SEQ ID NO:185 from nucleotide 1221 to nucleotide 1711; the nucleotide sequence of the full-length protein coding sequence of clone CW420_2 deposited with the ATCC under accession number 98292; or the nucleotide sequence of a mature protein coding sequence of clone CW420_2 deposited with the
15 ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CW420_2 deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:186 from amino acid 370 to amino acid 532. In further preferred
20 embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:186 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:186, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:186 having biological activity, the fragment comprising the
25 amino acid sequence from amino acid 725 to amino acid 734 of SEQ ID NO:186.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:185.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

30 (a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:185, but excluding the poly(A) tail at the 3'
35 end of SEQ ID NO:185; and

- (c) a fragment of the amino acid sequence of SEQ ID NO:184, the fragment comprising eight contiguous amino acids of SEQ ID NO:184; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CR678_1 deposited with the ATCC under accession number 98292;
- 5 the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:184 or the amino acid sequence of SEQ ID NO:184 from amino acid 1 to amino acid 106. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:184 having biological activity, the fragment preferably comprising eight (more preferably
- 10 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:184, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:184 having biological activity, the fragment comprising the amino acid sequence from amino acid 78 to amino acid 87 of SEQ ID NO:184.

In one embodiment, the present invention provides a composition comprising an isolated

15 polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:185;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:185 from nucleotide 116 to nucleotide 4498;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:185
- 20 from nucleotide 1221 to nucleotide 1711;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CW420_2 deposited with the ATCC under accession number 98292;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA
- 25 insert of clone CW420_2 deposited with the ATCC under accession number 98292;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CW420_2 deposited with the ATCC under accession number 98292;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert
- 30 of clone CW420_2 deposited with the ATCC under accession number 98292;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:186;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:186 having biological activity, the fragment comprising
- 35 eight contiguous amino acids of SEQ ID NO:186;

- (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in
- 5 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (ba) SEQ ID NO:183, but excluding the poly(A) tail at the 3' end of SEQ ID NO:183; and
- (bb) the nucleotide sequence of the cDNA insert of clone
- 10 CR678_1 deposited with the ATCC under accession number 98292;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).
- 15 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:183, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:183 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:183, but excluding the poly(A) tail at the 3' end of SEQ ID NO:183. Also preferably the polynucleotide isolated according to the above
- 20 process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:183 from nucleotide 214 to nucleotide 714, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:183 from nucleotide 214 to nucleotide 714, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:183 from nucleotide 214 to nucleotide 714. Also preferably the polynucleotide isolated according to
- 25 the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:183 from nucleotide 151 to nucleotide 531, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:183 from nucleotide 151 to nucleotide 531, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:183 from nucleotide 151 to nucleotide 531.
- 30 In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:
- (a) the amino acid sequence of SEQ ID NO:184;
- (b) the amino acid sequence of SEQ ID NO:184 from amino acid 1 to amino acid 106;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:183.

5 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:183 from nucleotide 214 to nucleotide 714; the nucleotide sequence of SEQ ID NO:183 from nucleotide 151 to nucleotide 531; the nucleotide sequence of the full-length protein coding sequence of clone CR678_1 deposited with the ATCC under accession number 98292; or the
10 nucleotide sequence of a mature protein coding sequence of clone CR678_1 deposited with the ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CR678_1 deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid
15 sequence of SEQ ID NO:184 from amino acid 1 to amino acid 106. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:184 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:184, or a polynucleotide encoding a protein comprising a fragment of the
20 amino acid sequence of SEQ ID NO:184 having biological activity, the fragment comprising the amino acid sequence from amino acid 78 to amino acid 87 of SEQ ID NO:184.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:183.

Further embodiments of the invention provide isolated polynucleotides produced
25 according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

30 (aa) SEQ ID NO:183, but excluding the poly(A) tail at the 3' end of SEQ ID NO:183; and

(ab) the nucleotide sequence of the cDNA insert of clone CR678_1 deposited with the ATCC under accession number 98292;

35 (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:182 or the amino acid sequence of SEQ ID NO:182 from amino acid 1 to amino acid 93. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:182 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:182, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:182 having biological activity, the fragment comprising the amino acid sequence from amino acid 99 to amino acid 108 of SEQ ID NO:182.

10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:183;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:183 from nucleotide 214 to nucleotide 714;
- 15 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:183 from nucleotide 151 to nucleotide 531;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CR678_1 deposited with the ATCC under accession number 98292;
- 20 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CR678_1 deposited with the ATCC under accession number 98292;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CR678_1 deposited with the ATCC under accession number 98292;
- 25 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CR678_1 deposited with the ATCC under accession number 98292;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:184;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:184 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:184;
- 30 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 35

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (ba) SEQ ID NO:181, but excluding the poly(A) tail at the 3' end of SEQ ID NO:181; and

(bb) the nucleotide sequence of the cDNA insert of clone BQ135_2 deposited with the ATCC under accession number 98292;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

10 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:181, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:181 to a nucleotide
15 sequence corresponding to the 3' end of SEQ ID NO:181, but excluding the poly(A) tail at the 3' end of SEQ ID NO:181. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:181 from nucleotide 139 to nucleotide 765, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:181 from nucleotide 139 to nucleotide
20 765, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:181 from nucleotide 139 to nucleotide 765. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:181 from nucleotide 1 to nucleotide 416, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:181 from nucleotide 1 to
25 nucleotide 416, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:181 from nucleotide 1 to nucleotide 416.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:182;
30 (b) the amino acid sequence of SEQ ID NO:182 from amino acid 1 to amino acid 93;

(c) a fragment of the amino acid sequence of SEQ ID NO:182, the fragment comprising eight contiguous amino acids of SEQ ID NO:182; and

(d) the amino acid sequence encoded by the cDNA insert of clone BQ135_2
35 deposited with the ATCC under accession number 98292;

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:181 from nucleotide 139 to nucleotide 765; the nucleotide sequence of SEQ ID NO:181 from nucleotide 1 to nucleotide 416; the nucleotide sequence of the full-length protein coding sequence of clone BQ135_2 deposited with the ATCC under accession number 98292; or the nucleotide
5 sequence of a mature protein coding sequence of clone BQ135_2 deposited with the ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BQ135_2 deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID
10 NO:182 from amino acid 1 to amino acid 93. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:182 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:182, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ
15 ID NO:182 having biological activity, the fragment comprising the amino acid sequence from amino acid 99 to amino acid 108 of SEQ ID NO:182.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:181.

Further embodiments of the invention provide isolated polynucleotides produced
20 according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 25 (aa) SEQ ID NO:181, but excluding the poly(A) tail at the 3' end of SEQ ID NO:181; and
 - (ab) the nucleotide sequence of the cDNA insert of clone BQ135_2 deposited with the ATCC under accession number 98292;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions
30 at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:

comprising a fragment of the amino acid sequence of SEQ ID NO:180 having biological activity, the fragment comprising the amino acid sequence from amino acid 21 to amino acid 30 of SEQ ID NO:180.

- In one embodiment, the present invention provides a composition comprising an isolated
- 5 polynucleotide selected from the group consisting of:
- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:181;
 - (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:181 from nucleotide 139 to nucleotide 765;
 - (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:181
10 from nucleotide 1 to nucleotide 416;
 - (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BQ135_2 deposited with the ATCC under accession number 98292;
 - (e) a polynucleotide encoding the full-length protein encoded by the cDNA
15 insert of clone BQ135_2 deposited with the ATCC under accession number 98292;
 - (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BQ135_2 deposited with the ATCC under accession number 98292;
 - (g) a polynucleotide encoding a mature protein encoded by the cDNA insert
20 of clone BQ135_2 deposited with the ATCC under accession number 98292;
 - (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:182;
 - (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:182 having biological activity, the fragment comprising
25 eight contiguous amino acids of SEQ ID NO:182;
 - (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
 - (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
 - (l) a polynucleotide that hybridizes under stringent conditions to any one of
30 the polynucleotides specified in (a)-(i); and
 - (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:181.

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:179, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:179 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:179, but excluding the poly(A) tail at the 3' end of SEQ ID NO:179. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:179 from nucleotide 751 to nucleotide 906, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:179 from nucleotide 751 to nucleotide 906, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:179 from nucleotide 751 to nucleotide 906. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:179 from nucleotide 829 to nucleotide 906, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:179 from nucleotide 829 to nucleotide 906, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:179 from nucleotide 829 to nucleotide 906. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:179 from nucleotide 556 to nucleotide 831, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:179 from nucleotide 556 to nucleotide 831, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:179 from nucleotide 556 to nucleotide 831.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:180;
 - (b) the amino acid sequence of SEQ ID NO:180 from amino acid 1 to amino acid 27;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:180, the fragment comprising eight contiguous amino acids of SEQ ID NO:180; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone BN387_3 deposited with the ATCC under accession number 98292;
- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:180 or the amino acid sequence of SEQ ID NO:180 from amino acid 1 to amino acid 27. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:180 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:180, or a protein

a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:180 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:180, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:180 having biological activity, the fragment comprising the amino acid sequence from amino acid 21 to amino acid 30 of SEQ ID NO:180.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:179.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:179, but excluding the poly(A) tail at the 3' end of SEQ ID NO:179; and

(ab) the nucleotide sequence of the cDNA insert of clone BN387_3 deposited with the ATCC under accession number 98292;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:179, but excluding the poly(A) tail at the 3' end of SEQ ID NO:179; and

(bb) the nucleotide sequence of the cDNA insert of clone BN387_3 deposited with the ATCC under accession number 98292;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BN387_3 deposited with the ATCC under accession number 98292;
- 5 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BN387_3 deposited with the ATCC under accession number 98292;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BN387_3 deposited with the ATCC under accession number 98292;
- 10 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BN387_3 deposited with the ATCC under accession number 98292;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:180;
- 15 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:180 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:180;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- 20 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:179.
- 25 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:179 from nucleotide 751 to nucleotide 906; the nucleotide sequence of SEQ ID NO:179 from nucleotide 829 to nucleotide 906; the nucleotide sequence of SEQ ID NO:179 from nucleotide 556 to nucleotide 831; the nucleotide sequence of the full-length protein coding sequence of clone BN387_3 deposited with the ATCC under accession number 98292; or the nucleotide sequence
- 30 of a mature protein coding sequence of clone BN387_3 deposited with the ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BN387_3 deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:180 from
- 35 amino acid 1 to amino acid 27. In further preferred embodiments, the present invention provides

polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:177 from nucleotide 928 to nucleotide 1134, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:177 from nucleotide 928 to nucleotide 1134, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:177 from nucleotide 928 to nucleotide 1134.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:178;
- 10 (b) the amino acid sequence of SEQ ID NO:178 from amino acid 5 to amino acid 72;
- (c) a fragment of the amino acid sequence of SEQ ID NO:178, the fragment comprising eight contiguous amino acids of SEQ ID NO:178; and
- (d) the amino acid sequence encoded by the cDNA insert of clone AM666_1
- 15 deposited with the ATCC under accession number 98292;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:178 or the amino acid sequence of SEQ ID NO:178 from amino acid 5 to amino acid 72. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID

20 NO:178 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:178, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:178 having biological activity, the fragment comprising the amino acid sequence from amino acid 52 to amino acid 61 of SEQ ID NO:178.

25 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:179;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:179 from nucleotide 751 to nucleotide 906;
- 30 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:179 from nucleotide 829 to nucleotide 906;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:179 from nucleotide 556 to nucleotide 831;

- (aa) SEQ ID NO:177, but excluding the poly(A) tail at the 3' end of SEQ ID NO:177; and
- (ab) the nucleotide sequence of the cDNA insert of clone AM666_1 deposited with the ATCC under accession number 98292;
- 5 (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- 10 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (ba) SEQ ID NO:177, but excluding the poly(A) tail at the 3' end of SEQ ID NO:177; and
- 15 (bb) the nucleotide sequence of the cDNA insert of clone AM666_1 deposited with the ATCC under accession number 98292;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- 20 (iv) isolating the polynucleotide products of step (b)(iii).
- Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:177, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:177 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:177, but excluding the poly(A) tail at the 3' end of SEQ ID NO:177. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:177 from nucleotide 918 to nucleotide 1262, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:177 from nucleotide 918 to nucleotide 1262, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:177 from nucleotide 918 to nucleotide 1262. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:177 from nucleotide 999 to nucleotide 1262, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:177 from nucleotide 999 to nucleotide 1262, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:177 from nucleotide 999 to nucleotide 1262. Also preferably the
- 35

(k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;

(l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;

5 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

(n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:177.

10 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:177 from nucleotide 918 to nucleotide 1262; the nucleotide sequence of SEQ ID NO:177 from nucleotide 999 to nucleotide 1262; the nucleotide sequence of SEQ ID NO:177 from nucleotide 928 to nucleotide 1134; the nucleotide sequence of the full-length protein coding sequence of clone AM666_1 deposited with the ATCC under accession number 98292; or the nucleotide
15 sequence of a mature protein coding sequence of clone AM666_1 deposited with the ATCC under accession number 98292. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AM666_1 deposited with the ATCC under accession number 98292. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID
20 NO:178 from amino acid 5 to amino acid 72. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:178 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:178, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ
25 ID NO:178 having biological activity, the fragment comprising the amino acid sequence from amino acid 52 to amino acid 61 of SEQ ID NO:178.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:177.

Further embodiments of the invention provide isolated polynucleotides produced
30 according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(d) the amino acid sequence encoded by the cDNA insert of clone CZ247_2 deposited with the ATCC under accession number 98279; the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:176 or the amino acid sequence of SEQ ID NO:176 from amino acid 298 to amino acid 374. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:176 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:176, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:176 having biological activity, the fragment comprising the amino acid sequence from amino acid 276 to amino acid 285 of SEQ ID NO:176.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:177;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:177 from nucleotide 918 to nucleotide 1262;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:177 from nucleotide 999 to nucleotide 1262;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:177 from nucleotide 928 to nucleotide 1134;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AM666_1 deposited with the ATCC under accession number 98292;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AM666_1 deposited with the ATCC under accession number 98292;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AM666_1 deposited with the ATCC under accession number 98292;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AM666_1 deposited with the ATCC under accession number 98292;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:178;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:178 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:178;

(bb) the nucleotide sequence of the cDNA insert of clone CZ247_2 deposited with the ATCC under accession number 98279;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

5 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:175, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:175 to a nucleotide
10 sequence corresponding to the 3' end of SEQ ID NO:175, but excluding the poly(A) tail at the 3' end of SEQ ID NO:175. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:175 from nucleotide 11 to nucleotide 1699, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:175 from nucleotide 11 to nucleotide
15 1699, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:175 from nucleotide 11 to nucleotide 1699. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:175 from nucleotide 1682 to nucleotide 1699, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:175 from
20 nucleotide 1682 to nucleotide 1699, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:175 from nucleotide 1682 to nucleotide 1699. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:175 from nucleotide 737 to nucleotide 1134, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said
25 sequence of SEQ ID NO:175 from nucleotide 737 to nucleotide 1134, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:175 from nucleotide 737 to nucleotide 1134.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- 30 (a) the amino acid sequence of SEQ ID NO:176;
- (b) the amino acid sequence of SEQ ID NO:176 from amino acid 298 to amino acid 374;
- (c) a fragment of the amino acid sequence of SEQ ID NO:176, the fragment comprising eight contiguous amino acids of SEQ ID NO:176; and

clone CZ247_2 deposited with the ATCC under accession number 98279; or the nucleotide sequence of a mature protein coding sequence of clone CZ247_2 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CZ247_2 deposited with the
5 ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:176 from amino acid 298 to amino acid 374. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:176 having biological activity, the fragment preferably comprising eight
10 (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:176, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:176 having biological activity, the fragment comprising the amino acid sequence from amino acid 276 to amino acid 285 of SEQ ID NO:176.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
15 NO:175.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X
20 SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:175, but excluding the poly(A) tail at the 3' end of SEQ ID NO:175; and
 - (ab) the nucleotide sequence of the cDNA insert of clone
25 CZ247_2 deposited with the ATCC under accession number 98279;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- 30 (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (ba) SEQ ID NO:175, but excluding the poly(A) tail at the 3'
35 end of SEQ ID NO:175; and

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:175;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:175 from nucleotide 11 to nucleotide 1699;
- 5 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:175 from nucleotide 1682 to nucleotide 1699;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:175 from nucleotide 737 to nucleotide 1134;
- 10 (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CZ247_2 deposited with the ATCC under accession number 98279;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CZ247_2 deposited with the ATCC under accession number 98279;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CZ247_2 deposited with the ATCC under accession number 15 98279;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CZ247_2 deposited with the ATCC under accession number 98279;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:176;
- 20 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:176 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:176;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- 25 (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- 30 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:175.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:175 from nucleotide 11 to nucleotide 1699; the nucleotide sequence of SEQ ID NO:175 from nucleotide 1682 to nucleotide 1699; the nucleotide sequence of SEQ ID NO:175 from nucleotide 35 737 to nucleotide 1134; the nucleotide sequence of the full-length protein coding sequence of

process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:173 from nucleotide 105 to nucleotide 1007, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:173 from nucleotide 105 to nucleotide 1007, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:173 from nucleotide 105 to nucleotide 1007. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:173 from nucleotide 801 to nucleotide 1007, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:173 from nucleotide 801 to nucleotide 1007, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:173 from nucleotide 801 to nucleotide 1007. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:173 from nucleotide 1 to nucleotide 352, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:173 from nucleotide 1 to nucleotide 352, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:173 from nucleotide 1 to nucleotide 352.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:174;
 - (b) the amino acid sequence of SEQ ID NO:174 from amino acid 1 to amino acid 83;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:174, the fragment comprising eight contiguous amino acids of SEQ ID NO:174; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone CW1155_3 deposited with the ATCC under accession number 98279;
- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:174 or the amino acid sequence of SEQ ID NO:174 from amino acid 1 to amino acid 83. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:174 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:174, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:174 having biological activity, the fragment comprising the amino acid sequence from amino acid 145 to amino acid 154 of SEQ ID NO:174.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

ID NO:174 having biological activity, the fragment comprising the amino acid sequence from amino acid 145 to amino acid 154 of SEQ ID NO:174.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:173.

5 Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X
10 SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:173, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:173; and

(ab) the nucleotide sequence of the cDNA insert of clone
CW1155_3 deposited with the ATCC under accession number 98279;

15 (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

20 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:173, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:173; and

25 (bb) the nucleotide sequence of the cDNA insert of clone CW1155_3 deposited with the ATCC under accession number 98279;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

30 (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:173, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:173 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:173, but excluding the poly(A) tail at the 3'
35 end of SEQ ID NO:173. Also preferably the polynucleotide isolated according to the above

- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CW1155_3 deposited with the ATCC under accession number 98279;
- 5 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CW1155_3 deposited with the ATCC under accession number 98279;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:174;
- 10 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:174 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:174;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- 15 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:173.
- 20 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:173 from nucleotide 105 to nucleotide 1007; the nucleotide sequence of SEQ ID NO:173 from nucleotide 801 to nucleotide 1007; the nucleotide sequence of SEQ ID NO:173 from nucleotide 1 to nucleotide 352; the nucleotide sequence of the full-length protein coding sequence of clone CW1155_3 deposited with the ATCC under accession number 98279; or the nucleotide sequence
- 25 of a mature protein coding sequence of clone CW1155_3 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CW1155_3 deposited with the ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID
- 30 NO:174 from amino acid 1 to amino acid 83. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:174 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:174, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ

from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:171 from nucleotide 265 to nucleotide 515, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:171 from nucleotide 265 to nucleotide 515.

In other embodiments, the present invention provides a composition comprising a protein,
5 wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:172;
- (b) the amino acid sequence of SEQ ID NO:172 from amino acid 64 to amino acid 138;
- (c) a fragment of the amino acid sequence of SEQ ID NO:172, the fragment
10 comprising eight contiguous amino acids of SEQ ID NO:172; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CP258_3 deposited with the ATCC under accession number 98279;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:172 or the amino acid sequence of SEQ ID
15 NO:172 from amino acid 64 to amino acid 138. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:172 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:172, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:172 having biological activity,
20 the fragment comprising the amino acid sequence from amino acid 64 to amino acid 73 of SEQ ID NO:172.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:173;
- 25 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:173 from nucleotide 105 to nucleotide 1007;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:173 from nucleotide 801 to nucleotide 1007;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:173
30 from nucleotide 1 to nucleotide 352;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CW1155_3 deposited with the ATCC under accession number 98279;
- 35 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CW1155_3 deposited with the ATCC under accession number 98279;

- (ab) the nucleotide sequence of the cDNA insert of clone CP258_3 deposited with the ATCC under accession number 98279;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- 5 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
- 10 consisting of:
- (ba) SEQ ID NO:171, but excluding the poly(A) tail at the 3' end of SEQ ID NO:171; and
- (bb) the nucleotide sequence of the cDNA insert of clone CP258_3 deposited with the ATCC under accession number 98279;
- 15 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).
- Preferably the polynucleotide isolated according to the above process comprises a nucleotide
- 20 sequence corresponding to the cDNA sequence of SEQ ID NO:171, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:171 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:171, but excluding the poly(A) tail at the 3' end of SEQ ID NO:171. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:171
- 25 from nucleotide 40 to nucleotide 455, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:171 from nucleotide 40 to nucleotide 455, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:171 from nucleotide 40 to nucleotide 455. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ
- 30 ID NO:171 from nucleotide 85 to nucleotide 455, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:171 from nucleotide 85 to nucleotide 455, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:171 from nucleotide 85 to nucleotide 455. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA
- 35 sequence of SEQ ID NO:171 from nucleotide 265 to nucleotide 515, and extending contiguously

(l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

5 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:171.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:171 from nucleotide 40 to nucleotide 455; the nucleotide sequence of SEQ ID NO:171 from nucleotide
10 85 to nucleotide 455; the nucleotide sequence of SEQ ID NO:171 from nucleotide 265 to nucleotide 515; the nucleotide sequence of the full-length protein coding sequence of clone CP258_3 deposited with the ATCC under accession number 98279; or the nucleotide sequence of a mature protein coding sequence of clone CP258_3 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a
15 mature protein encoded by the cDNA insert of clone CP258_3 deposited with the ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:172 from amino acid 64 to amino acid 138. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence
20 of SEQ ID NO:172 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:172, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:172 having biological activity, the fragment comprising the amino acid sequence from amino acid 64 to amino acid 73 of SEQ ID NO:172.

25 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:171.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:
30 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:171, but excluding the poly(A) tail at the 3' end of SEQ ID NO:171; and

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:170 or the amino acid sequence of SEQ ID NO:170 from amino acid 1 to amino acid 44. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:170 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:170, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:170 having biological activity, the fragment comprising the amino acid sequence from amino acid 34 to amino acid 43 of SEQ ID NO:170.

10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:171;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:171 from nucleotide 40 to nucleotide 455;
- 15 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:171 from nucleotide 85 to nucleotide 455;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:171 from nucleotide 265 to nucleotide 515;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CP258_3 deposited with the ATCC under accession number 98279;
- 20 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CP258_3 deposited with the ATCC under accession number 98279;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CP258_3 deposited with the ATCC under accession number 98279;
- 25 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CP258_3 deposited with the ATCC under accession number 98279;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:172;
- 30 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:172 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:172;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h)
- 35 above;

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:169, but excluding the poly(A) tail at the 3' end of SEQ ID NO:169; and

(bb) the nucleotide sequence of the cDNA insert of clone CO310_2 deposited with the ATCC under accession number 98279;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:169, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:169 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:169, but excluding the poly(A) tail at the 3' end of SEQ ID NO:169. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:169 from nucleotide 303 to nucleotide 542, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:169 from nucleotide 303 to nucleotide 542, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:169 from nucleotide 303 to nucleotide 542. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:169 from nucleotide 1 to nucleotide 435, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:169 from nucleotide 1 to nucleotide 435, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:169 from nucleotide 1 to nucleotide 435.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:170;

(b) the amino acid sequence of SEQ ID NO:170 from amino acid 1 to amino acid 44;

(c) a fragment of the amino acid sequence of SEQ ID NO:170, the fragment comprising eight contiguous amino acids of SEQ ID NO:170; and

(d) the amino acid sequence encoded by the cDNA insert of clone CO310_2 deposited with the ATCC under accession number 98279;

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:169 from nucleotide 303 to nucleotide 542; the nucleotide sequence of SEQ ID NO:169 from nucleotide 1 to nucleotide 435; the nucleotide sequence of the full-length protein coding sequence of clone CO310_2 deposited with the ATCC under accession number 98279; or the nucleotide sequence of a mature protein coding sequence of clone CO310_2 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CO310_2 deposited with the ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:170 from amino acid 1 to amino acid 44. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:170 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:170, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:170 having biological activity, the fragment comprising the amino acid sequence from amino acid 34 to amino acid 43 of SEQ ID NO:170.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:169.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:169, but excluding the poly(A) tail at the 3' end of SEQ ID NO:169; and
 - (ab) the nucleotide sequence of the cDNA insert of clone CO310_2 deposited with the ATCC under accession number 98279;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:

twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:168, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:168 having biological activity, the fragment comprising the amino acid sequence from amino acid 52 to amino acid 61 of SEQ ID NO:168.

5 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:169;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:169 from nucleotide 303 to nucleotide 542;
- 10 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:169 from nucleotide 1 to nucleotide 435;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CO310_2 deposited with the ATCC under accession number 98279;
- 15 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CO310_2 deposited with the ATCC under accession number 98279;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CO310_2 deposited with the ATCC under accession number 98279;
- 20 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CO310_2 deposited with the ATCC under accession number 98279;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:170;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:170 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:170;
- 25 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 30 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:169.
- 35

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:167, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:167 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:167, but excluding the poly(A) tail at the 3' end of SEQ ID NO:167. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:167 from nucleotide 176 to nucleotide 520, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:167 from nucleotide 176 to nucleotide 520, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:167 from nucleotide 176 to nucleotide 520. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:167 from nucleotide 317 to nucleotide 520, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:167 from nucleotide 317 to nucleotide 520, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:167 from nucleotide 317 to nucleotide 520. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:167 from nucleotide 118 to nucleotide 413, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:167 from nucleotide 118 to nucleotide 413, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:167 from nucleotide 118 to nucleotide 413.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:168;
- (b) the amino acid sequence of SEQ ID NO:168 from amino acid 1 to amino acid 80;
- (c) a fragment of the amino acid sequence of SEQ ID NO:168, the fragment comprising eight contiguous amino acids of SEQ ID NO:168; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CO223_3 deposited with the ATCC under accession number 98291;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:168 or the amino acid sequence of SEQ ID NO:168 from amino acid 1 to amino acid 80. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:168 having biological activity, the fragment preferably comprising eight (more preferably

polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:168 from amino acid 1 to amino acid 80. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:168 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:168, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:168 having biological activity, the fragment comprising the amino acid sequence from amino acid 52 to amino acid 61 of SEQ ID NO:168.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:167.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:167, but excluding the poly(A) tail at the 3' end of SEQ ID NO:167; and

(ab) the nucleotide sequence of the cDNA insert of clone CO223_3 deposited with the ATCC under accession number 98291;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:167, but excluding the poly(A) tail at the 3' end of SEQ ID NO:167; and

(bb) the nucleotide sequence of the cDNA insert of clone CO223_3 deposited with the ATCC under accession number 98291;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:167 from nucleotide 118 to nucleotide 413;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CO223_3 deposited with the ATCC under accession number 98291;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CO223_3 deposited with the ATCC under accession number 98291;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CO223_3 deposited with the ATCC under accession number 98291;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CO223_3 deposited with the ATCC under accession number 98291;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:168;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:168 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:168;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:167.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:167 from nucleotide 176 to nucleotide 520; the nucleotide sequence of SEQ ID NO:167 from nucleotide 317 to nucleotide 520; the nucleotide sequence of SEQ ID NO:167 from nucleotide 118 to nucleotide 413; the nucleotide sequence of the full-length protein coding sequence of clone CO223_3 deposited with the ATCC under accession number 98291; or the nucleotide sequence of a mature protein coding sequence of clone CO223_3 deposited with the ATCC under accession number 98291. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CO223_3 deposited with the ATCC under accession number 98291. In yet other preferred embodiments, the present invention provides a

from nucleotide 180 to nucleotide 467, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:164 from nucleotide 180 to nucleotide 467, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:164 from nucleotide 180 to nucleotide 467. Also preferably the polynucleotide isolated according to
5 the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:164 from nucleotide 267 to nucleotide 467, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:164 from nucleotide 267 to nucleotide 467, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:164 from nucleotide 267 to nucleotide 467.

10 In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:165;
- (b) the amino acid sequence of SEQ ID NO:165 from amino acid 1 to amino acid 37;

15 (c) a fragment of the amino acid sequence of SEQ ID NO:165, the fragment comprising eight contiguous amino acids of SEQ ID NO:165; and

(d) the amino acid sequence encoded by the cDNA insert of clone CO20_1 deposited with the ATCC under accession number 98279;

the protein being substantially free from other mammalian proteins. Preferably such protein
20 comprises the amino acid sequence of SEQ ID NO:165 or the amino acid sequence of SEQ ID NO:165 from amino acid 1 to amino acid 37. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:165 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:165, or a protein
25 comprising a fragment of the amino acid sequence of SEQ ID NO:165 having biological activity, the fragment comprising the amino acid sequence from amino acid 43 to amino acid 52 of SEQ ID NO:165.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- 30
- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:167;
 - (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:167 from nucleotide 176 to nucleotide 520;
 - (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:167 from nucleotide 317 to nucleotide 520;

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(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:164;

5 (ab) SEQ ID NO:166, but excluding the poly(A) tail at the 3' end of SEQ ID NO:166; and

(ac) the nucleotide sequence of the cDNA insert of clone CO20_1 deposited with the ATCC under accession number 98279;

10 (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

15 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:164;

(bb) SEQ ID NO:166, but excluding the poly(A) tail at the 3' end of SEQ ID NO:166; and

20 (bc) the nucleotide sequence of the cDNA insert of clone CO20_1 deposited with the ATCC under accession number 98279;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

25 (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:164 and SEQ ID NO:166, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:164 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:166, but excluding the poly(A) tail at the 3' end of SEQ ID NO:166. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:164, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:164 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:164. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:164

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- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:165 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:165;
- 5 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- 10 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:164.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:164 from nucleotide 180 to nucleotide 467; the nucleotide sequence of SEQ ID NO:164 from nucleotide 267 to nucleotide 467; the nucleotide sequence of the full-length protein coding sequence of clone CO20_1 deposited with the ATCC under accession number 98279; or the nucleotide sequence of a mature protein coding sequence of clone CO20_1 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CO20_1 deposited with the ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:165 from amino acid 1 to amino acid 37. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:165 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:165, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:165 having biological activity, the fragment comprising the amino acid sequence from amino acid 43 to amino acid 52 of SEQ ID NO:165.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:164 and SEQ ID NO:166.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:

- (a) the amino acid sequence of SEQ ID NO:163;
- (b) the amino acid sequence of SEQ ID NO:163 from amino acid 7 to amino acid 48;
- (c) a fragment of the amino acid sequence of SEQ ID NO:163, the fragment comprising eight contiguous amino acids of SEQ ID NO:163; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CJ160_11 deposited with the ATCC under accession number 98279;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:163 or the amino acid sequence of SEQ ID NO:163 from amino acid 7 to amino acid 48. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:163 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:163, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:163 having biological activity, the fragment comprising the amino acid sequence from amino acid 45 to amino acid 54 of SEQ ID NO:163.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:164;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:164 from nucleotide 180 to nucleotide 467;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:164 from nucleotide 267 to nucleotide 467;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CO20_1 deposited with the ATCC under accession number 98279;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CO20_1 deposited with the ATCC under accession number 98279;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CO20_1 deposited with the ATCC under accession number 98279;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CO20_1 deposited with the ATCC under accession number 98279;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:165;

and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:162, but excluding the poly(A) tail at the 3' end of SEQ ID NO:162; and

(bb) the nucleotide sequence of the cDNA insert of clone CJ160_11 deposited with the ATCC under accession number 98279;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:162, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:162 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:162, but excluding the poly(A) tail at the 3' end of SEQ ID NO:162. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:162 from nucleotide 40 to nucleotide 342, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:162 from nucleotide 40 to nucleotide 342, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:162 from nucleotide 40 to nucleotide 342. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:162 from nucleotide 127 to nucleotide 342, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:162 from nucleotide 127 to nucleotide 342, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:162 from nucleotide 127 to nucleotide 342. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:162 from nucleotide 11 to nucleotide 181, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:162 from nucleotide 11 to nucleotide 181, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:162 from nucleotide 11 to nucleotide 181.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:162.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:162 from nucleotide 40 to nucleotide 342; the nucleotide sequence of SEQ ID NO:162 from nucleotide 127 to nucleotide 342; the nucleotide sequence of SEQ ID NO:162 from nucleotide 11 to nucleotide 181; the nucleotide sequence of the full-length protein coding sequence of clone CJ160_11 deposited with the ATCC under accession number 98279; or the nucleotide sequence of a mature protein coding sequence of clone CJ160_11 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CJ160_11 deposited with the ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:163 from amino acid 7 to amino acid 48. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:163 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:163, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:163 having biological activity, the fragment comprising the amino acid sequence from amino acid 45 to amino acid 54 of SEQ ID NO:163.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:162.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 25 (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 30 (aa) SEQ ID NO:162, but excluding the poly(A) tail at the 3' end of SEQ ID NO:162; and
 - (ab) the nucleotide sequence of the cDNA insert of clone CJ160_11 deposited with the ATCC under accession number 98279;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 35 (iii) isolating the DNA polynucleotides detected with the probe(s);

twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:161, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:161 having biological activity, the fragment comprising the amino acid sequence from amino acid 482 to amino acid 491 of SEQ ID NO:161.

5 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:162;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:162 from nucleotide 40 to nucleotide 342;
- 10 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:162 from nucleotide 127 to nucleotide 342;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:162 from nucleotide 11 to nucleotide 181;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CJ160_11 deposited with the ATCC under accession number 98279;
- 15 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CJ160_11 deposited with the ATCC under accession number 98279;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CJ160_11 deposited with the ATCC under accession number 98279;
- 20 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CJ160_11 deposited with the ATCC under accession number 98279;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:163;
- 25 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:163 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:163;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- 30 (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:160, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:160 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:160, but excluding the poly(A) tail at the 3' end of SEQ ID NO:160. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:160 from nucleotide 126 to nucleotide 3053, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:160 from nucleotide 126 to nucleotide 3053, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:160 from nucleotide 126 to nucleotide 3053. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:160 from nucleotide 180 to nucleotide 3053, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:160 from nucleotide 180 to nucleotide 3053, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:160 from nucleotide 180 to nucleotide 3053. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:160 from nucleotide 49 to nucleotide 382, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:160 from nucleotide 49 to nucleotide 382, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:160 from nucleotide 49 to nucleotide 382.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:161;
- (b) the amino acid sequence of SEQ ID NO:161 from amino acid 1 to amino acid 87;
- (c) a fragment of the amino acid sequence of SEQ ID NO:161, the fragment comprising eight contiguous amino acids of SEQ ID NO:161; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CJ145_1 deposited with the ATCC under accession number 98279;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:161 or the amino acid sequence of SEQ ID NO:161 from amino acid 1 to amino acid 87. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:161 having biological activity, the fragment preferably comprising eight (more preferably

a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:161 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:161, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:161 having biological activity, the fragment comprising the amino acid sequence from amino acid 482 to amino acid 491 of SEQ ID NO:161.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:160.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (aa) SEQ ID NO:160, but excluding the poly(A) tail at the 3' end of SEQ ID NO:160; and

- (ab) the nucleotide sequence of the cDNA insert of clone CJ145_1 deposited with the ATCC under accession number 98279;

- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

- (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:

- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (ba) SEQ ID NO:160, but excluding the poly(A) tail at the 3' end of SEQ ID NO:160; and

- (bb) the nucleotide sequence of the cDNA insert of clone CJ145_1 deposited with the ATCC under accession number 98279;

- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

- (iii) amplifying human DNA sequences; and

- (iv) isolating the polynucleotide products of step (b)(iii).

- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CJ145_1 deposited with the ATCC under accession number 98279;
- 5 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CJ145_1 deposited with the ATCC under accession number 98279;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CJ145_1 deposited with the ATCC under accession number 98279;
- 10 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CJ145_1 deposited with the ATCC under accession number 98279;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:161;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:161 having biological activity, the fragment comprising
15 eight contiguous amino acids of SEQ ID NO:161;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- 20 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:160.
- 25 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:160 from nucleotide 126 to nucleotide 3053; the nucleotide sequence of SEQ ID NO:160 from nucleotide 180 to nucleotide 3053; the nucleotide sequence of SEQ ID NO:160 from nucleotide 49 to nucleotide 382; the nucleotide sequence of the full-length protein coding sequence of clone CJ145_1 deposited with the ATCC under accession number 98279; or the nucleotide sequence of
30 a mature protein coding sequence of clone CJ145_1 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CJ145_1 deposited with the ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:161 from
35 amino acid 1 to amino acid 87. In further preferred embodiments, the present invention provides

nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:158 from nucleotide 500 to nucleotide 1108, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:158 from nucleotide 500 to nucleotide 1108. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence
5 corresponding to the cDNA sequence of SEQ ID NO:158 from nucleotide 1 to nucleotide 387, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:158 from nucleotide 1 to nucleotide 387, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:158 from nucleotide 1 to nucleotide 387.

In other embodiments, the present invention provides a composition comprising a protein,
10 wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:159;
- (b) the amino acid sequence of SEQ ID NO:159 from amino acid 23 to amino acid 57;
- (c) a fragment of the amino acid sequence of SEQ ID NO:159, the fragment
15 comprising eight contiguous amino acids of SEQ ID NO:159; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CG300_3 deposited with the ATCC under accession number 98279;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:159 or the amino acid sequence of SEQ ID
20 NO:159 from amino acid 23 to amino acid 57. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:159 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:159, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:159 having biological activity,
25 the fragment comprising the amino acid sequence from amino acid 117 to amino acid 126 of SEQ ID NO:159.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:160;
- 30 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:160 from nucleotide 126 to nucleotide 3053;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:160 from nucleotide 180 to nucleotide 3053;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:160
35 from nucleotide 49 to nucleotide 382;

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(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (aa) SEQ ID NO:158, but excluding the poly(A) tail at the 3' end of SEQ ID NO:158; and

(ab) the nucleotide sequence of the cDNA insert of clone CG300_3 deposited with the ATCC under accession number 98279;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

10 (iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

15 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:158, but excluding the poly(A) tail at the 3' end of SEQ ID NO:158; and

(bb) the nucleotide sequence of the cDNA insert of clone CG300_3 deposited with the ATCC under accession number 98279;

20 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

25 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:158, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:158 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:158, but excluding the poly(A) tail at the 3' end of SEQ ID NO:158. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:158
30 from nucleotide 374 to nucleotide 1108, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:158 from nucleotide 374 to nucleotide 1108, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:158 from nucleotide 374 to nucleotide 1108. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of
35 SEQ ID NO:158 from nucleotide 500 to nucleotide 1108, and extending contiguously from a

(j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:159 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:159;

5 (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;

(l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

10 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:158.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:158 from nucleotide 374 to nucleotide 1108; the nucleotide sequence of SEQ ID NO:158 from
15 nucleotide 500 to nucleotide 1108; the nucleotide sequence of SEQ ID NO:158 from nucleotide 1 to nucleotide 387; the nucleotide sequence of the full-length protein coding sequence of clone CG300_3 deposited with the ATCC under accession number 98279; or the nucleotide sequence of a mature protein coding sequence of clone CG300_3 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a
20 mature protein encoded by the cDNA insert of clone CG300_3 deposited with the ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:159 from amino acid 23 to amino acid 57. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ
25 ID NO:159 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:159, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:159 having biological activity, the fragment comprising the amino acid sequence from amino acid 117 to amino acid 126 of SEQ ID NO:159.

30 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:158.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

- (c) a fragment of the amino acid sequence of SEQ ID NO:156, the fragment comprising eight contiguous amino acids of SEQ ID NO:156; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CB107_1 deposited with the ATCC under accession number 98279;
- 5 the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:156 or the amino acid sequence of SEQ ID NO:156 from amino acid 127 to amino acid 240. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:156 having biological activity, the fragment preferably comprising eight (more preferably
- 10 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:156, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:156 having biological activity, the fragment comprising the amino acid sequence from amino acid 115 to amino acid 124 of SEQ ID NO:156.

In one embodiment, the present invention provides a composition comprising an isolated

15 polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:158;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:158 from nucleotide 374 to nucleotide 1108;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:158
- 20 from nucleotide 500 to nucleotide 1108;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:158 from nucleotide 1 to nucleotide 387;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CG300_3 deposited with the ATCC under accession
- 25 number 98279;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CG300_3 deposited with the ATCC under accession number 98279;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CG300_3 deposited with the ATCC under accession number
- 30 98279;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CG300_3 deposited with the ATCC under accession number 98279;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:159;

and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:154;

(bb) SEQ ID NO:155;

(bc) SEQ ID NO:157, but excluding the poly(A) tail at the 3' end of SEQ ID NO:157; and

(bd) the nucleotide sequence of the cDNA insert of clone CB107_1 deposited with the ATCC under accession number 98279;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:154, SEQ ID NO:155, and SEQ ID NO:157, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:154 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:157, but excluding the poly(A) tail at the 3' end of SEQ ID NO:157. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:155, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:155 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:155. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:155 from nucleotide 41 to nucleotide 760, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:155 from nucleotide 41 to nucleotide 760, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:155 from nucleotide 41 to nucleotide 760.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:156;

(b) the amino acid sequence of SEQ ID NO:156 from amino acid 127 to amino acid 240;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:155.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:155
5 from nucleotide 41 to nucleotide 760; the nucleotide sequence of the full-length protein coding sequence of clone CB107_1 deposited with the ATCC under accession number 98279; or the nucleotide sequence of a mature protein coding sequence of clone CB107_1 deposited with the ATCC under accession number 98279. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CB107_1
10 deposited with the ATCC under accession number 98279. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:156 from amino acid 127 to amino acid 240. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:156 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:156, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:156 having biological activity, the fragment comprising the amino acid sequence from amino acid 115 to amino acid 124 of SEQ ID NO:156.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
20 NO:155, SEQ ID NO:154, and SEQ ID NO:157.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X
25 SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:154;
 - (ab) SEQ ID NO:155;
 - (ac) SEQ ID NO:157, but excluding the poly(A) tail at the 3'
30 end of SEQ ID NO:157; and
 - (ad) the nucleotide sequence of the cDNA insert of clone CB107_1 deposited with the ATCC under accession number 98279;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
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the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:153 or the amino acid sequence of SEQ ID NO:153 from amino acid 75 to amino acid 251. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:153 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:153, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:153 having biological activity, the fragment comprising the amino acid sequence from amino acid 450 to amino acid 459 of SEQ ID NO:153.

10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:155;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:155 from nucleotide 41 to nucleotide 760;
- 15 (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CB107_1 deposited with the ATCC under accession number 98279;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CB107_1 deposited with the ATCC under accession number 98279;
- 20 (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CB107_1 deposited with the ATCC under accession number 98279;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CB107_1 deposited with the ATCC under accession number 98279;
- 25 (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:156;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:156 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:156;
- 30 (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of
- 35 the polynucleotides specified in (a)-(h); and

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (ba) SEQ ID NO:152, but excluding the poly(A) tail at the 3' end of SEQ ID NO:152; and

(bb) the nucleotide sequence of the cDNA insert of clone CT797_3 deposited with the ATCC under accession number 98278;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

10 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:152, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:152 to a nucleotide
15 sequence corresponding to the 3' end of SEQ ID NO:152, but excluding the poly(A) tail at the 3' end of SEQ ID NO:152. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:152 from nucleotide 37 to nucleotide 2766, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:152 from nucleotide 37 to nucleotide
20 2766, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:152 from nucleotide 37 to nucleotide 2766. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:152 from nucleotide 243 to nucleotide 789, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:152 from nucleotide 243
25 to nucleotide 789, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:152 from nucleotide 243 to nucleotide 789.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:153;
30 (b) the amino acid sequence of SEQ ID NO:153 from amino acid 75 to amino acid 251;

(c) a fragment of the amino acid sequence of SEQ ID NO:153, the fragment comprising eight contiguous amino acids of SEQ ID NO:153; and

(d) the amino acid sequence encoded by the cDNA insert of clone CT797_3
35 deposited with the ATCC under accession number 98278;

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:152 from nucleotide 37 to nucleotide 2766; the nucleotide sequence of SEQ ID NO:152 from nucleotide 243 to nucleotide 789; the nucleotide sequence of the full-length protein coding sequence of clone CT797_3 deposited with the ATCC under accession number 98278; or the nucleotide sequence of a mature protein coding sequence of clone CT797_3 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CT797_3 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:153 from amino acid 75 to amino acid 251. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:153 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:153, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:153 having biological activity, the fragment comprising the amino acid sequence from amino acid 450 to amino acid 459 of SEQ ID NO:153.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:152.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:152, but excluding the poly(A) tail at the 3' end of SEQ ID NO:152; and
 - (ab) the nucleotide sequence of the cDNA insert of clone CT797_3 deposited with the ATCC under accession number 98278;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:

comprising a fragment of the amino acid sequence of SEQ ID NO:151 having biological activity, the fragment comprising the amino acid sequence from amino acid 138 to amino acid 147 of SEQ ID NO:151.

- In one embodiment, the present invention provides a composition comprising an isolated
- 5 polynucleotide selected from the group consisting of:
- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:152;
 - (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:152 from nucleotide 37 to nucleotide 2766;
 - (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:152 from nucleotide 243 to nucleotide 789;
 - (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CT797_3 deposited with the ATCC under accession number 98278;
 - (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CT797_3 deposited with the ATCC under accession number 98278;
 - (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CT797_3 deposited with the ATCC under accession number 98278;
 - (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CT797_3 deposited with the ATCC under accession number 98278;
 - (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:153;
 - (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:153 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:153;
 - (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
 - (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
 - (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
 - (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:152.

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:150, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:150 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:150, but excluding the poly(A) tail at the 3' end of SEQ ID NO:150. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:150 from nucleotide 112 to nucleotide 969, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:150 from nucleotide 112 to nucleotide 969, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:150 from nucleotide 112 to nucleotide 969. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:150 from nucleotide 154 to nucleotide 969, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:150 from nucleotide 154 to nucleotide 969, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:150 from nucleotide 154 to nucleotide 969. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:150 from nucleotide 1 to nucleotide 423, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:150 from nucleotide 1 to nucleotide 423, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:150 from nucleotide 1 to nucleotide 423.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:151;
 - (b) the amino acid sequence of SEQ ID NO:151 from amino acid 1 to amino acid 104;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:151, the fragment comprising eight contiguous amino acids of SEQ ID NO:151; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone CT585_1 deposited with the ATCC under accession number 98278;
- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:151 or the amino acid sequence of SEQ ID NO:151 from amino acid 1 to amino acid 104. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:151 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:151, or a protein

a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:151 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:151, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:151 having
5 biological activity, the fragment comprising the amino acid sequence from amino acid 138 to amino acid 147 of SEQ ID NO:151.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:150.

Further embodiments of the invention provide isolated polynucleotides produced
10 according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

15 (aa) SEQ ID NO:150, but excluding the poly(A) tail at the 3' end of SEQ ID NO:150; and

(ab) the nucleotide sequence of the cDNA insert of clone CT585_1 deposited with the ATCC under accession number 98278;
(ii) hybridizing said probe(s) to human genomic DNA in conditions
20 at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);
and

- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in
25 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:150, but excluding the poly(A) tail at the 3' end of SEQ ID NO:150; and

(bb) the nucleotide sequence of the cDNA insert of clone CT585_1 deposited with the ATCC under accession number 98278;
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(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CT585_1 deposited with the ATCC under accession number 98278;
- 5 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CT585_1 deposited with the ATCC under accession number 98278;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CT585_1 deposited with the ATCC under accession number 98278;
- 10 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CT585_1 deposited with the ATCC under accession number 98278;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:151;
- 15 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:151 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:151;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- 20 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:150.
- 25 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:150 from nucleotide 112 to nucleotide 969; the nucleotide sequence of SEQ ID NO:150 from nucleotide 154 to nucleotide 969; the nucleotide sequence of SEQ ID NO:150 from nucleotide 1 to nucleotide 423; the nucleotide sequence of the full-length protein coding sequence of clone CT585_1 deposited with the ATCC under accession number 98278; or the nucleotide sequence
- 30 of a mature protein coding sequence of clone CT585_1 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CT585_1 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:151 from
- 35 amino acid 1 to amino acid 104. In further preferred embodiments, the present invention provides

corresponding to the 5' end of said sequence of SEQ ID NO:148 from nucleotide 223 to nucleotide 483, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:148 from nucleotide 223 to nucleotide 483. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:148 from nucleotide 22 to nucleotide 397, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:148 from nucleotide 22 to nucleotide 397, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:148 from nucleotide 22 to nucleotide 397.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:149;
- (b) the amino acid sequence of SEQ ID NO:149 from amino acid 1 to amino acid 58;
- (c) a fragment of the amino acid sequence of SEQ ID NO:149, the fragment comprising eight contiguous amino acids of SEQ ID NO:149; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CT550_1 deposited with the ATCC under accession number 98278;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:149 or the amino acid sequence of SEQ ID NO:149 from amino acid 1 to amino acid 58. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:149 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:149, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:149 having biological activity, the fragment comprising the amino acid sequence from amino acid 38 to amino acid 47 of SEQ ID NO:149.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:150;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:150 from nucleotide 112 to nucleotide 969;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:150 from nucleotide 154 to nucleotide 969;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:150 from nucleotide 1 to nucleotide 423;

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:148.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 5 (a) a process comprising the steps of:
- (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

10 (aa) SEQ ID NO:148, but excluding the poly(A) tail at the 3' end of SEQ ID NO:148; and

- (ab) the nucleotide sequence of the cDNA insert of clone CT550_1 deposited with the ATCC under accession number 98278;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- 15 (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- 20 (ba) SEQ ID NO:148, but excluding the poly(A) tail at the 3' end of SEQ ID NO:148; and

- (bb) the nucleotide sequence of the cDNA insert of clone CT550_1 deposited with the ATCC under accession number 98278;
- 25 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:148, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:148 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:148, but excluding the poly(A) tail at the 3' end of SEQ ID NO:148. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:148 from nucleotide 223 to nucleotide 483, and extending contiguously from a nucleotide sequence

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- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CT550_1 deposited with the ATCC under accession number 98278;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CT550_1 deposited with the ATCC under accession number 98278;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:149;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:149 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:149;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:148.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:148 from nucleotide 223 to nucleotide 483; the nucleotide sequence of SEQ ID NO:148 from nucleotide 22 to nucleotide 397; the nucleotide sequence of the full-length protein coding sequence of clone CT550_1 deposited with the ATCC under accession number 98278; or the nucleotide sequence of a mature protein coding sequence of clone CT550_1 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CT550_1 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:149 from amino acid 1 to amino acid 58. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:149 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:149, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:149 having biological activity, the fragment comprising the amino acid sequence from amino acid 38 to amino acid 47 of SEQ ID NO:149.

from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:146 from nucleotide 1 to nucleotide 316, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:146 from nucleotide 1 to nucleotide 316.

In other embodiments, the present invention provides a composition comprising a protein,
5 wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:147;
- (b) the amino acid sequence of SEQ ID NO:147 from amino acid 1 to amino acid 57;
- (c) a fragment of the amino acid sequence of SEQ ID NO:147, the fragment
10 comprising eight contiguous amino acids of SEQ ID NO:147; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CQ331_2 deposited with the ATCC under accession number 98278;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:147 or the amino acid sequence of SEQ ID
15 NO:147 from amino acid 1 to amino acid 57. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:147 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:147, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:147 having biological activity,
20 the fragment comprising the amino acid sequence from amino acid 129 to amino acid 138 of SEQ ID NO:147.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:148;
- 25 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:148 from nucleotide 223 to nucleotide 483;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:148 from nucleotide 22 to nucleotide 397;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length
30 protein coding sequence of clone CT550_1 deposited with the ATCC under accession number 98278;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CT550_1 deposited with the ATCC under accession number 98278;

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- (ab) the nucleotide sequence of the cDNA insert of clone CQ331_2 deposited with the ATCC under accession number 98278;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- 5 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
- 10 consisting of:
- (ba) SEQ ID NO:146, but excluding the poly(A) tail at the 3' end of SEQ ID NO:146; and
- (bb) the nucleotide sequence of the cDNA insert of clone CQ331_2 deposited with the ATCC under accession number 98278;
- 15 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).
- Preferably the polynucleotide isolated according to the above process comprises a nucleotide
- 20 sequence corresponding to the cDNA sequence of SEQ ID NO:146, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:146 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:146, but excluding the poly(A) tail at the 3' end of SEQ ID NO:146. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:146
- 25 from nucleotide 117 to nucleotide 923, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:146 from nucleotide 117 to nucleotide 923, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:146 from nucleotide 117 to nucleotide 923. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ
- 30 ID NO:146 from nucleotide 174 to nucleotide 923, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:146 from nucleotide 174 to nucleotide 923, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:146 from nucleotide 174 to nucleotide 923. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA
- 35 sequence of SEQ ID NO:146 from nucleotide 1 to nucleotide 316, and extending contiguously

(l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

5 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:146.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:146 from nucleotide 117 to nucleotide 923; the nucleotide sequence of SEQ ID NO:146 from
10 nucleotide 174 to nucleotide 923; the nucleotide sequence of SEQ ID NO:146 from nucleotide 1 to nucleotide 316; the nucleotide sequence of the full-length protein coding sequence of clone CQ331_2 deposited with the ATCC under accession number 98278; or the nucleotide sequence of a mature protein coding sequence of clone CQ331_2 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a
15 mature protein encoded by the cDNA insert of clone CQ331_2 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:147 from amino acid 1 to amino acid 57. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ
20 ID NO:147 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:147, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:147 having biological activity, the fragment comprising the amino acid sequence from amino acid 129 to amino acid 138 of SEQ ID NO:147.

25 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:146.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:
30 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:146, but excluding the poly(A) tail at the 3' end of SEQ ID NO:146; and

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:145 or the amino acid sequence of SEQ ID NO:145 from amino acid 1 to amino acid 88. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:145 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:145, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:145 having biological activity, the fragment comprising the amino acid sequence from amino acid 149 to amino acid 158 of SEQ ID NO:145.

10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:146;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:146 from nucleotide 117 to nucleotide 923;
- 15 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:146 from nucleotide 174 to nucleotide 923;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:146 from nucleotide 1 to nucleotide 316;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CQ331_2 deposited with the ATCC under accession number 98278;
- 20 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CQ331_2 deposited with the ATCC under accession number 98278;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CQ331_2 deposited with the ATCC under accession number 98278;
- 25 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CQ331_2 deposited with the ATCC under accession number 98278;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:147;
- 30 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:147 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:147;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h)
- 35 above;

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:144, but excluding the poly(A) tail at the 3' end of SEQ ID NO:144; and

(bb) the nucleotide sequence of the cDNA insert of clone CK201_1 deposited with the ATCC under accession number 98278;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:144, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:144 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:144, but excluding the poly(A) tail at the 3' end of SEQ ID NO:144. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:144 from nucleotide 189 to nucleotide 1115, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:144 from nucleotide 189 to nucleotide 1115, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:144 from nucleotide 189 to nucleotide 1115. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:144 from nucleotide 1 to nucleotide 451, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:144 from nucleotide 1 to nucleotide 451, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:144 from nucleotide 1 to nucleotide 451.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:145;

(b) the amino acid sequence of SEQ ID NO:145 from amino acid 1 to amino acid 88;

(c) a fragment of the amino acid sequence of SEQ ID NO:145, the fragment comprising eight contiguous amino acids of SEQ ID NO:145; and

(d) the amino acid sequence encoded by the cDNA insert of clone CK201_1 deposited with the ATCC under accession number 98278;

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:144 from nucleotide 189 to nucleotide 1115; the nucleotide sequence of SEQ ID NO:144 from nucleotide 1 to nucleotide 451; the nucleotide sequence of the full-length protein coding sequence of clone CK201_1 deposited with the ATCC under accession number 98278; or the nucleotide
5 sequence of a mature protein coding sequence of clone CK201_1 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CK201_1 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID
10 NO:145 from amino acid 1 to amino acid 88. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:145 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:145, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ
15 ID NO:145 having biological activity, the fragment comprising the amino acid sequence from amino acid 149 to amino acid 158 of SEQ ID NO:145.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:144.

Further embodiments of the invention provide isolated polynucleotides produced
20 according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 25 (aa) SEQ ID NO:144, but excluding the poly(A) tail at the 3' end of SEQ ID NO:144; and
 - (ab) the nucleotide sequence of the cDNA insert of clone CK201_1 deposited with the ATCC under accession number 98278;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions
30 at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:

twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:143, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:143 having biological activity, the fragment comprising the amino acid sequence from amino acid 26 to amino acid 35 of SEQ ID NO:143.

5 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:144;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:144 from nucleotide 189 to nucleotide 1115;
- 10 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:144 from nucleotide 1 to nucleotide 451;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CK201_1 deposited with the ATCC under accession number 98278;
- 15 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CK201_1 deposited with the ATCC under accession number 98278;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CK201_1 deposited with the ATCC under accession number 98278;
- 20 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CK201_1 deposited with the ATCC under accession number 98278;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:145;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:145 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:145;
- 25 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 30 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:144.
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(bb) the nucleotide sequence of the cDNA insert of clone BV291_3 deposited with the ATCC under accession number 98278;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

5 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:142, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:142 to a nucleotide
10 sequence corresponding to the 3' end of SEQ ID NO:142, but excluding the poly(A) tail at the 3' end of SEQ ID NO:142. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:142 from nucleotide 1204 to nucleotide 1389, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:142 from nucleotide 1204 to
15 nucleotide 1389, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:142 from nucleotide 1204 to nucleotide 1389. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:142 from nucleotide 881 to nucleotide 1380, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:142 from
20 nucleotide 881 to nucleotide 1380, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:142 from nucleotide 881 to nucleotide 1380.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:143;
- 25 (b) the amino acid sequence of SEQ ID NO:143 from amino acid 1 to amino acid 59;
- (c) a fragment of the amino acid sequence of SEQ ID NO:143, the fragment comprising eight contiguous amino acids of SEQ ID NO:143; and
- (d) the amino acid sequence encoded by the cDNA insert of clone BV291_3
30 deposited with the ATCC under accession number 98278;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:143 or the amino acid sequence of SEQ ID NO:143 from amino acid 1 to amino acid 59. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID
35 NO:143 having biological activity, the fragment preferably comprising eight (more preferably

nucleotide sequence of a mature protein coding sequence of clone BV291_3 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BV291_3 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:143 from amino acid 1 to amino acid 59. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:143 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:143, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:143 having biological activity, the fragment comprising the amino acid sequence from amino acid 26 to amino acid 35 of SEQ ID NO:143.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:142.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (aa) SEQ ID NO:142, but excluding the poly(A) tail at the 3' end of SEQ ID NO:142; and

- (ab) the nucleotide sequence of the cDNA insert of clone BV291_3 deposited with the ATCC under accession number 98278;

- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

- (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:

- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (ba) SEQ ID NO:142, but excluding the poly(A) tail at the 3' end of SEQ ID NO:142; and

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:142;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:142
5 from nucleotide 1204 to nucleotide 1389;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:142
from nucleotide 881 to nucleotide 1380;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length
protein coding sequence of clone BV291_3 deposited with the ATCC under accession
10 number 98278;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA
insert of clone BV291_3 deposited with the ATCC under accession number 98278;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein
coding sequence of clone BV291_3 deposited with the ATCC under accession number
15 98278;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert
of clone BV291_3 deposited with the ATCC under accession number 98278;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence
of SEQ ID NO:143;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino
20 acid sequence of SEQ ID NO:143 having biological activity, the fragment comprising
eight contiguous amino acids of SEQ ID NO:143;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g)
above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h)
25 or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of
the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of
30 the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the
length of SEQ ID NO:142.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:142
from nucleotide 1204 to nucleotide 1389; the nucleotide sequence of SEQ ID NO:142 from
nucleotide 881 to nucleotide 1380; the nucleotide sequence of the full-length protein coding
35 sequence of clone BV291_3 deposited with the ATCC under accession number 98278; or the

- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:140, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:140 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:140, but excluding the poly(A) tail at the 3' end of SEQ ID NO:140. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:140 from nucleotide 404 to nucleotide 535, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:140 from nucleotide 404 to nucleotide 535, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:140 from nucleotide 404 to nucleotide 535. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:140 from nucleotide 1 to nucleotide 666, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:140 from nucleotide 1 to nucleotide 666, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:140 from nucleotide 1 to nucleotide 666.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:141;
- (b) the amino acid sequence of SEQ ID NO:141 from amino acid 1 to amino acid 38;
- (c) a fragment of the amino acid sequence of SEQ ID NO:141, the fragment comprising eight contiguous amino acids of SEQ ID NO:141; and
- (d) the amino acid sequence encoded by the cDNA insert of clone BV66_1 deposited with the ATCC under accession number 98278;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:141 or the amino acid sequence of SEQ ID NO:141 from amino acid 1 to amino acid 38. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:141 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:141, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:141 having biological activity, the fragment comprising the amino acid sequence from amino acid 17 to amino acid 26 of SEQ ID NO:141.

ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:141 from amino acid 1 to amino acid 38. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid
5 sequence of SEQ ID NO:141 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:141, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:141 having biological activity, the fragment comprising the amino acid sequence from amino acid 17 to amino acid 26 of SEQ ID NO:141.

10 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:140.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - 15 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:140, but excluding the poly(A) tail at the 3' end of SEQ ID NO:140; and
 - 20 (ab) the nucleotide sequence of the cDNA insert of clone BV66_1 deposited with the ATCC under accession number 98278;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
 - 25 and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 30 (ba) SEQ ID NO:140, but excluding the poly(A) tail at the 3' end of SEQ ID NO:140; and
 - (bb) the nucleotide sequence of the cDNA insert of clone BV66_1 deposited with the ATCC under accession number 98278;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions
 - 35 at least as stringent as 4X SSC at 50 degrees C;

- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:140 from nucleotide 404 to nucleotide 535;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:140 from nucleotide 1 to nucleotide 666;
- 5 (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BV66_1 deposited with the ATCC under accession number 98278;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BV66_1 deposited with the ATCC under accession number 98278;
- 10 (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BV66_1 deposited with the ATCC under accession number 98278;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BV66_1 deposited with the ATCC under accession number 98278;
- 15 (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:141;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:141 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:141;
- 20 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- 25 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:140.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:140 from nucleotide 404 to nucleotide 535; the nucleotide sequence of SEQ ID NO:140 from nucleotide 1 to nucleotide 666; the nucleotide sequence of the full-length protein coding sequence of clone BV66_1 deposited with the ATCC under accession number 98278; or the nucleotide sequence of a mature protein coding sequence of clone BV66_1 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BV66_1 deposited with the
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from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:138 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:138, but excluding the poly(A) tail at the 3' end of SEQ ID NO:138. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:138
5 from nucleotide 62 to nucleotide 757, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:138 from nucleotide 62 to nucleotide 757, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:138 from nucleotide 62 to nucleotide 757. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ
10 ID NO:138 from nucleotide 357 to nucleotide 703, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:138 from nucleotide 357 to nucleotide 703, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:138 from nucleotide 357 to nucleotide 703.

In other embodiments, the present invention provides a composition comprising a protein,
15 wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:139;
- (b) the amino acid sequence of SEQ ID NO:139 from amino acid 184 to amino acid 214;
- (c) a fragment of the amino acid sequence of SEQ ID NO:139, the fragment
20 comprising eight contiguous amino acids of SEQ ID NO:139; and
- (d) the amino acid sequence encoded by the cDNA insert of clone BG142_1 deposited with the ATCC under accession number 98278;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:139 or the amino acid sequence of SEQ ID
25 NO:139 from amino acid 184 to amino acid 214. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:139 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:139, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:139 having biological activity,
30 the fragment comprising the amino acid sequence from amino acid 111 to amino acid 120 of SEQ ID NO:139.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:140;

fragment of the amino acid sequence of SEQ ID NO:139 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:139, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:139 having biological activity, the fragment comprising the amino acid sequence from amino acid 111 to amino acid 120 of SEQ ID NO:139.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:138.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 10 (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 15 (aa) SEQ ID NO:138, but excluding the poly(A) tail at the 3' end of SEQ ID NO:138; and
 - (ab) the nucleotide sequence of the cDNA insert of clone BG142_1 deposited with the ATCC under accession number 98278;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 20 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 25 (ba) SEQ ID NO:138, but excluding the poly(A) tail at the 3' end of SEQ ID NO:138; and
 - (bb) the nucleotide sequence of the cDNA insert of clone BG142_1 deposited with the ATCC under accession number 98278;
 - 30 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:138, and extending contiguously

- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BG142_1 deposited with the ATCC under accession number 98278;
- 5 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BG142_1 deposited with the ATCC under accession number 98278;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BG142_1 deposited with the ATCC under accession number 98278;
- 10 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BG142_1 deposited with the ATCC under accession number 98278;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:139;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:139 having biological activity, the fragment comprising 15 eight contiguous amino acids of SEQ ID NO:139;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 20 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:138.
- 25 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:138 from nucleotide 62 to nucleotide 757; the nucleotide sequence of SEQ ID NO:138 from nucleotide 357 to nucleotide 703; the nucleotide sequence of the full-length protein coding sequence of clone BG142_1 deposited with the ATCC under accession number 98278; or the nucleotide sequence of a mature protein coding sequence of clone BG142_1 deposited with the 30 ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BG142_1 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:139 from amino acid 184 to amino acid 214. In further preferred 35 embodiments, the present invention provides a polynucleotide encoding a protein comprising a

corresponding to the 5' end of said sequence of SEQ ID NO:136 from nucleotide 7 to nucleotide 1647, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:136 from nucleotide 7 to nucleotide 1647. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:136 from nucleotide 1 to nucleotide 305, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:136 from nucleotide 1 to nucleotide 305, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:136 from nucleotide 1 to nucleotide 305.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:137;
- (b) the amino acid sequence of SEQ ID NO:137 from amino acid 1 to amino acid 68;
- (c) a fragment of the amino acid sequence of SEQ ID NO:137, the fragment comprising eight contiguous amino acids of SEQ ID NO:137; and
- (d) the amino acid sequence encoded by the cDNA insert of clone AQ73_3 deposited with the ATCC under accession number 98278;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:137 or the amino acid sequence of SEQ ID NO:137 from amino acid 1 to amino acid 68. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:137 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:137, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:137 having biological activity, the fragment comprising the amino acid sequence from amino acid 268 to amino acid 277 of SEQ ID NO:137.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:138;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:138 from nucleotide 62 to nucleotide 757;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:138 from nucleotide 357 to nucleotide 703;

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:136.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 5 (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 10 (aa) SEQ ID NO:136, but excluding the poly(A) tail at the 3' end of SEQ ID NO:136; and
 - (ab) the nucleotide sequence of the cDNA insert of clone AQ73_3 deposited with the ATCC under accession number 98278;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 15 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 20 (ba) SEQ ID NO:136, but excluding the poly(A) tail at the 3' end of SEQ ID NO:136; and
 - (bb) the nucleotide sequence of the cDNA insert of clone AQ73_3 deposited with the ATCC under accession number 98278;
 - 25 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:136, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:136 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:136, but excluding the poly(A) tail at the 3' end of SEQ ID NO:136. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:136 from nucleotide 7 to nucleotide 1647, and extending contiguously from a nucleotide sequence

- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AQ73_3 deposited with the ATCC under accession number 98278;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AQ73_3 deposited with the ATCC under accession number 98278;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:137;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:137 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:137;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:136.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:136 from nucleotide 7 to nucleotide 1647; the nucleotide sequence of SEQ ID NO:136 from nucleotide 1 to nucleotide 305; the nucleotide sequence of the full-length protein coding sequence of clone AQ73_3 deposited with the ATCC under accession number 98278; or the nucleotide sequence of a mature protein coding sequence of clone AQ73_3 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AQ73_3 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:137 from amino acid 1 to amino acid 68. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:137 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:137, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:137 having biological activity, the fragment comprising the amino acid sequence from amino acid 268 to amino acid 277 of SEQ ID NO:137.

process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:133 from nucleotide 22 to nucleotide 462, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:133 from nucleotide 22 to nucleotide 462, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:133 from nucleotide 22 to nucleotide 462.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:134;
- (b) the amino acid sequence of SEQ ID NO:134 from amino acid 52 to amino acid 147;
- (c) a fragment of the amino acid sequence of SEQ ID NO:134, the fragment comprising eight contiguous amino acids of SEQ ID NO:134; and
- (d) the amino acid sequence encoded by the cDNA insert of clone AJ1_1 deposited with the ATCC under accession number 98278;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:134 or the amino acid sequence of SEQ ID NO:134 from amino acid 52 to amino acid 147. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:134 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:134, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:134 having biological activity, the fragment comprising the amino acid sequence from amino acid 68 to amino acid 77 of SEQ ID NO:134.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:136;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:136 from nucleotide 7 to nucleotide 1647;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:136 from nucleotide 1 to nucleotide 305;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AQ73_3 deposited with the ATCC under accession number 98278;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AQ73_3 deposited with the ATCC under accession number 98278;

- (a) a process comprising the steps of:
- (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- 5 (aa) SEQ ID NO:133;
- (ab) SEQ ID NO:135, but excluding the poly(A) tail at the 3' end of SEQ ID NO:135; and
- (ac) the nucleotide sequence of the cDNA insert of clone AJ1_1 deposited with the ATCC under accession number 98278;
- 10 (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:
- 15 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (ba) SEQ ID NO:133;
- (bb) SEQ ID NO:135, but excluding the poly(A) tail at the 3' end of SEQ ID NO:135; and
- 20 (bc) the nucleotide sequence of the cDNA insert of clone AJ1_1 deposited with the ATCC under accession number 98278;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- 25 (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:133 and SEQ ID NO:135, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:133 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:135, but excluding the poly(A) tail at the 3' end of SEQ ID NO:135. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:133, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:133 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:133. Also preferably the polynucleotide isolated according to the above

- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AJ1_1 deposited with the ATCC under accession number 98278;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:134;
- 5 (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:134 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:134;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- 10 (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:133.
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Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:133 from nucleotide 22 to nucleotide 462; the nucleotide sequence of the full-length protein coding sequence of clone AJ1_1 deposited with the ATCC under accession number 98278; or the nucleotide sequence of a mature protein coding sequence of clone AJ1_1 deposited with the ATCC under accession number 98278. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AJ1_1 deposited with the ATCC under accession number 98278. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:134 from amino acid 52 to amino acid 147. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:134 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:134, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:134 having biological activity, the fragment comprising the amino acid sequence from amino acid 68 to amino acid 77 of SEQ ID NO:134.

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Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:133 and SEQ ID NO:135.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

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1260, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:131 from nucleotide 1037 to nucleotide 1260, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:131 from nucleotide 1037 to nucleotide 1260.

5 In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:132;
- (b) the amino acid sequence of SEQ ID NO:132 from amino acid 22 to amino acid 116;
- 10 (c) a fragment of the amino acid sequence of SEQ ID NO:132, the fragment comprising eight contiguous amino acids of SEQ ID NO:132; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CT748_2 deposited with the ATCC under accession number 98271;

the protein being substantially free from other mammalian proteins. Preferably such protein
15 comprises the amino acid sequence of SEQ ID NO:132 or the amino acid sequence of SEQ ID NO:132 from amino acid 22 to amino acid 116. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:132 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:132, or a protein
20 comprising a fragment of the amino acid sequence of SEQ ID NO:132 having biological activity, the fragment comprising the amino acid sequence from amino acid 234 to amino acid 243 of SEQ ID NO:132.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- 25 (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:133;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:133 from nucleotide 22 to nucleotide 462;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AJ1_1 deposited with the ATCC under accession
30 number 98278;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AJ1_1 deposited with the ATCC under accession number 98278;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AJ1_1 deposited with the ATCC under accession number
35 98278;

- (ab) the nucleotide sequence of the cDNA insert of clone CT748_2 deposited with the ATCC under accession number 98271;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- 5 (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- 10 (ba) SEQ ID NO:131, but excluding the poly(A) tail at the 3' end of SEQ ID NO:131; and
- (bb) the nucleotide sequence of the cDNA insert of clone CT748_2 deposited with the ATCC under accession number 98271;
- 15 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide

20 sequence corresponding to the cDNA sequence of SEQ ID NO:131, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:131 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:131, but excluding the poly(A) tail at the 3' end of SEQ ID NO:131. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:131

25 from nucleotide 914 to nucleotide 2353, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:131 from nucleotide 914 to nucleotide 2353, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:131 from nucleotide 914 to nucleotide 2353. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of

30 SEQ ID NO:131 from nucleotide 1793 to nucleotide 2353, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:131 from nucleotide 1793 to nucleotide 2353, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:131 from nucleotide 1793 to nucleotide 2353. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence

35 corresponding to the cDNA sequence of SEQ ID NO:131 from nucleotide 1037 to nucleotide

(l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

5 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:131.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:131 from nucleotide 914 to nucleotide 2353; the nucleotide sequence of SEQ ID NO:131 from
10 nucleotide 1793 to nucleotide 2353; the nucleotide sequence of SEQ ID NO:131 from nucleotide 1037 to nucleotide 1260; the nucleotide sequence of the full-length protein coding sequence of clone CT748_2 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone CT748_2 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-
15 length or a mature protein encoded by the cDNA insert of clone CT748_2 deposited with the ATCC under accession number 98271. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:132 from amino acid 22 to amino acid 116. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid
20 sequence of SEQ ID NO:132 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:132, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:132 having biological activity, the fragment comprising the amino acid sequence from amino acid 234 to amino acid 243 of SEQ ID NO:132.

25 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:131.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
- 30 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (aa) SEQ ID NO:131, but excluding the poly(A) tail at the 3' end of SEQ ID NO:131; and

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:130 or the amino acid sequence of SEQ ID NO:130 from amino acid 1 to amino acid 34. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:130 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:130, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:130 having biological activity, the fragment comprising the amino acid sequence from amino acid 591 to amino acid 600 of SEQ ID NO:130.

10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:131;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:131 from nucleotide 914 to nucleotide 2353;
- 15 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:131 from nucleotide 1793 to nucleotide 2353;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:131 from nucleotide 1037 to nucleotide 1260;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CT748_2 deposited with the ATCC under accession number 98271;
- 20 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CT748_2 deposited with the ATCC under accession number 98271;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CT748_2 deposited with the ATCC under accession number 98271;
- 25 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CT748_2 deposited with the ATCC under accession number 98271;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:132;
- 30 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:132 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:132;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h)
- 35 above;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

- 5 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:129, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:129 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:129, but excluding the poly(A) tail at the 3' end of SEQ ID NO:129. Also preferably the polynucleotide isolated according to the above
- 10 process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:129 from nucleotide 383 to nucleotide 3958, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:129 from nucleotide 383 to nucleotide 3958, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:129 from nucleotide 383 to nucleotide 3958. Also preferably the polynucleotide isolated according
- 15 to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:129 from nucleotide 470 to nucleotide 3958, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:129 from nucleotide 470 to nucleotide 3958, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:129 from nucleotide 470 to nucleotide 3958. Also preferably the
- 20 polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:129 from nucleotide 271 to nucleotide 488, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:129 from nucleotide 271 to nucleotide 488, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:129 from nucleotide 271 to nucleotide
- 25 488.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:130;
- (b) the amino acid sequence of SEQ ID NO:130 from amino acid 1 to amino
- 30 acid 34;
- (c) a fragment of the amino acid sequence of SEQ ID NO:130, the fragment comprising eight contiguous amino acids of SEQ ID NO:130; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271;

mature protein encoded by the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:130 from amino acid 1 to amino acid 34. In further preferred embodiments, the present invention provides
5 a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:130 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:130, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:130 having biological activity, the fragment comprising the amino acid sequence from amino acid 591 to
10 amino acid 600 of SEQ ID NO:130.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:129.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 15 (a) a process comprising the steps of:
- (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- 20 (aa) SEQ ID NO:129, but excluding the poly(A) tail at the 3' end of SEQ ID NO:129; and
- (ab) the nucleotide sequence of the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- 25 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
30 consisting of:
- (ba) SEQ ID NO:129, but excluding the poly(A) tail at the 3' end of SEQ ID NO:129; and
- (bb) the nucleotide sequence of the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271;

- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:129 from nucleotide 470 to nucleotide 3958;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:129 from nucleotide 271 to nucleotide 488;
- 5 (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CO722_1 deposited with the ATCC under accession number 98271;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271;
- 10 (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CO722_1 deposited with the ATCC under accession number 98271;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CO722_1 deposited with the ATCC under accession number 98271;
- 15 (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:130;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:130 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:130;
- 20 (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- 25 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:129.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:129 from nucleotide 383 to nucleotide 3958; the nucleotide sequence of SEQ ID NO:129 from nucleotide 470 to nucleotide 3958; the nucleotide sequence of SEQ ID NO:129 from nucleotide 271 to nucleotide 488; the nucleotide sequence of the full-length protein coding sequence of clone CO722_1 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone CO722_1 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a

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from nucleotide 128 to nucleotide 1600. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:127 from nucleotide 281 to nucleotide 1600, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:127 from nucleotide 281 to nucleotide 1600, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:127 from nucleotide 281 to nucleotide 1600. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:127 from nucleotide 62 to nucleotide 373, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:127 from nucleotide 62 to nucleotide 373, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:127 from nucleotide 62 to nucleotide 373.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:128;
- (b) the amino acid sequence of SEQ ID NO:128 from amino acid 1 to amino acid 82;
- (c) a fragment of the amino acid sequence of SEQ ID NO:128, the fragment comprising eight contiguous amino acids of SEQ ID NO:128; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CI480_9 deposited with the ATCC under accession number 98271;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:128 or the amino acid sequence of SEQ ID NO:128 from amino acid 1 to amino acid 82. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:128 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:128, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:128 having biological activity, the fragment comprising the amino acid sequence from amino acid 240 to amino acid 249 of SEQ ID NO:128.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:129;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:129 from nucleotide 383 to nucleotide 3958;

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:127, but excluding the poly(A) tail at the 3' end of SEQ ID NO:127; and

(ab) the nucleotide sequence of the cDNA insert of clone CI480_9 deposited with the ATCC under accession number 98271;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:127, but excluding the poly(A) tail at the 3' end of SEQ ID NO:127; and

(bb) the nucleotide sequence of the cDNA insert of clone CI480_9 deposited with the ATCC under accession number 98271;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:127, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:127 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:127, but excluding the poly(A) tail at the 3' end of SEQ ID NO:127. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:127 from nucleotide 128 to nucleotide 1600, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:127 from nucleotide 128 to nucleotide 1600, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:127

- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CI480_9 deposited with the ATCC under accession number 98271;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:128;
- 5 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:128 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:128;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- 10 (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of
15 the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:127.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:127 from nucleotide 128 to nucleotide 1600; the nucleotide sequence of SEQ ID NO:127 from nucleotide 281 to nucleotide 1600; the nucleotide sequence of SEQ ID NO:127 from nucleotide
20 62 to nucleotide 373; the nucleotide sequence of the full-length protein coding sequence of clone CI480_9 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone CI480_9 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CI480_9 deposited with the ATCC under
25 accession number 98271. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:128 from amino acid 1 to amino acid 82. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:128 having biological activity, the fragment preferably comprising eight (more preferably
30 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:128, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:128 having biological activity, the fragment comprising the amino acid sequence from amino acid 240 to amino acid 249 of SEQ ID NO:128.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
35 NO:127.

nucleotide 270 to nucleotide 419, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:125 from nucleotide 270 to nucleotide 419.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- 5 (a) the amino acid sequence of SEQ ID NO:126;
- (b) a fragment of the amino acid sequence of SEQ ID NO:126, the fragment comprising eight contiguous amino acids of SEQ ID NO:126; and
- (c) the amino acid sequence encoded by the cDNA insert of clone CC247_10 deposited with the ATCC under accession number 98271;
- 10 the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:126. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:126 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:126, or a protein
- 15 comprising a fragment of the amino acid sequence of SEQ ID NO:126 having biological activity, the fragment comprising the amino acid sequence from amino acid 7 to amino acid 16 of SEQ ID NO:126.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- 20 (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:127;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:127 from nucleotide 128 to nucleotide 1600;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:127 from nucleotide 281 to nucleotide 1600;
- 25 (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:127 from nucleotide 62 to nucleotide 373;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CI480_9 deposited with the ATCC under accession number 98271;
- 30 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CI480_9 deposited with the ATCC under accession number 98271;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CI480_9 deposited with the ATCC under accession number 98271;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

5 (b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

10 (ba) SEQ ID NO:125, but excluding the poly(A) tail at the 3' end of SEQ ID NO:125; and

(bb) the nucleotide sequence of the cDNA insert of clone CC247_10 deposited with the ATCC under accession number 98271;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

15 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:125, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:125 to a nucleotide
20 sequence corresponding to the 3' end of SEQ ID NO:125, but excluding the poly(A) tail at the 3' end of SEQ ID NO:125. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:125 from nucleotide 338 to nucleotide 409, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:125 from nucleotide 338 to nucleotide
25 409, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:125 from nucleotide 338 to nucleotide 409. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:125 from nucleotide 362 to nucleotide 409, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:125 from nucleotide 362
30 to nucleotide 409, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:125 from nucleotide 362 to nucleotide 409. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:125 from nucleotide 270 to nucleotide 419, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:125 from

(l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

5 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:125.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:125 from nucleotide 338 to nucleotide 409; the nucleotide sequence of SEQ ID NO:125 from nucleotide 362 to nucleotide 409; the nucleotide sequence of SEQ ID NO:125 from nucleotide 270 to nucleotide 419; the nucleotide sequence of the full-length protein coding sequence of clone CC247_10 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone CC247_10 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CC247_10 deposited with the ATCC under accession number 98271. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:126 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:126, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:126 having biological activity, the fragment comprising the amino acid sequence from amino acid 7 to amino acid 16 of SEQ ID NO:126.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:125.

25 Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

30 (aa) SEQ ID NO:125, but excluding the poly(A) tail at the 3' end of SEQ ID NO:125; and

(ab) the nucleotide sequence of the cDNA insert of clone CC247_10 deposited with the ATCC under accession number 98271;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:124 or the amino acid sequence of SEQ ID NO:124 from amino acid 1 to amino acid 51. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:124 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:124, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:124 having biological activity, the fragment comprising the amino acid sequence from amino acid 26 to amino acid 35 of SEQ ID NO:124.

10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:125;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:125 from nucleotide 338 to nucleotide 409;
- 15 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:125 from nucleotide 362 to nucleotide 409;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:125 from nucleotide 270 to nucleotide 419;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CC247_10 deposited with the ATCC under accession number 98271;
- 20 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CC247_10 deposited with the ATCC under accession number 98271;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CC247_10 deposited with the ATCC under accession number 98271;
- 25 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CC247_10 deposited with the ATCC under accession number 98271;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:126;
- 30 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:126 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:126;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h)
- 35 above;

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:123, but excluding the poly(A) tail at the 3' end of SEQ ID NO:123; and

(bb) the nucleotide sequence of the cDNA insert of clone BV172_2 deposited with the ATCC under accession number 98271;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:123, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:123 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:123, but excluding the poly(A) tail at the 3' end of SEQ ID NO:123. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 215, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 215, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 215. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 181, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 181, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 181.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:124;

(b) the amino acid sequence of SEQ ID NO:124 from amino acid 1 to amino acid 51;

(c) a fragment of the amino acid sequence of SEQ ID NO:124, the fragment comprising eight contiguous amino acids of SEQ ID NO:124; and

(d) the amino acid sequence encoded by the cDNA insert of clone BV172_2 deposited with the ATCC under accession number 98271;

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 215; the nucleotide sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 181; the nucleotide sequence of the full-length protein coding sequence of clone BV172_2 deposited with the ATCC under accession number 98271; or the
5 nucleotide sequence of a mature protein coding sequence of clone BV172_2 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BV172_2 deposited with the ATCC under accession number 98271. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid
10 sequence of SEQ ID NO:124 from amino acid 1 to amino acid 51. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:124 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:124, or a polynucleotide encoding a protein comprising a fragment of the
15 amino acid sequence of SEQ ID NO:124 having biological activity, the fragment comprising the amino acid sequence from amino acid 26 to amino acid 35 of SEQ ID NO:124.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:123.

Further embodiments of the invention provide isolated polynucleotides produced
20 according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
25 (aa) SEQ ID NO:123, but excluding the poly(A) tail at the 3' end of SEQ ID NO:123; and
(ab) the nucleotide sequence of the cDNA insert of clone BV172_2 deposited with the ATCC under accession number 98271;
(ii) hybridizing said probe(s) to human genomic DNA in conditions
30 at least as stringent as 4X SSC at 50 degrees C; and
(iii) isolating the DNA polynucleotides detected with the probe(s);
and
- (b) a process comprising the steps of:

comprising a fragment of the amino acid sequence of SEQ ID NO:122 having biological activity, the fragment comprising the amino acid sequence from amino acid 61 to amino acid 70 of SEQ ID NO:122.

- In one embodiment, the present invention provides a composition comprising an isolated
- 5 polynucleotide selected from the group consisting of:
- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:123;
 - (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:123 from nucleotide 27 to nucleotide 215;
 - (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:123
10 from nucleotide 27 to nucleotide 181;
 - (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BV172_2 deposited with the ATCC under accession number 98271;
 - (e) a polynucleotide encoding the full-length protein encoded by the cDNA
15 insert of clone BV172_2 deposited with the ATCC under accession number 98271;
 - (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BV172_2 deposited with the ATCC under accession number 98271;
 - (g) a polynucleotide encoding a mature protein encoded by the cDNA insert
20 of clone BV172_2 deposited with the ATCC under accession number 98271;
 - (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:124;
 - (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:124 having biological activity, the fragment comprising
25 eight contiguous amino acids of SEQ ID NO:124;
 - (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
 - (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
 - (l) a polynucleotide that hybridizes under stringent conditions to any one of
30 the polynucleotides specified in (a)-(i); and
 - (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:123.

(ba) SEQ ID NO:121, but excluding the poly(A) tail at the 3' end of SEQ ID NO:121; and

(bb) the nucleotide sequence of the cDNA insert of clone BG366_2 deposited with the ATCC under accession number 98271;

5 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide
10 sequence corresponding to the cDNA sequence of SEQ ID NO:121, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:121 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:121, but excluding the poly(A) tail at the 3' end of SEQ ID NO:121. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:121
15 from nucleotide 2115 to nucleotide 2510, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:121 from nucleotide 2115 to nucleotide 2510, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:121 from nucleotide 2115 to nucleotide 2510. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA
20 sequence of SEQ ID NO:121 from nucleotide 1 to nucleotide 324, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:121 from nucleotide 1 to nucleotide 324, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:121 from nucleotide 1 to nucleotide 324.

In other embodiments, the present invention provides a composition comprising a protein,
25 wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:122;

(b) a fragment of the amino acid sequence of SEQ ID NO:122, the fragment comprising eight contiguous amino acids of SEQ ID NO:122; and

(c) the amino acid sequence encoded by the cDNA insert of clone BG366_2
30 deposited with the ATCC under accession number 98271;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:122. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:122 having biological activity, the fragment preferably comprising eight (more preferably
35 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:122, or a protein

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:121 from nucleotide 2115 to nucleotide 2510; the nucleotide sequence of SEQ ID NO:121 from nucleotide 1 to nucleotide 324; the nucleotide sequence of the full-length protein coding sequence of clone BG366_2 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone BG366_2 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BG366_2 deposited with the ATCC under accession number 98271. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:122 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:122, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:122 having biological activity, the fragment comprising the amino acid sequence from amino acid 61 to amino acid 70 of SEQ ID NO:122.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:121.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:121, but excluding the poly(A) tail at the 3' end of SEQ ID NO:121; and
 - (ab) the nucleotide sequence of the cDNA insert of clone BG366_2 deposited with the ATCC under accession number 98271;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:120, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:120 having biological activity, the fragment comprising the amino acid sequence from amino acid 74 to amino acid 83 of SEQ ID NO:120.

5 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:121;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:121 from nucleotide 2115 to nucleotide 2510;
- 10 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:121 from nucleotide 1 to nucleotide 324;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BG366_2 deposited with the ATCC under accession number 98271;
- 15 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BG366_2 deposited with the ATCC under accession number 98271;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BG366_2 deposited with the ATCC under accession number 98271;
- 20 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BG366_2 deposited with the ATCC under accession number 98271;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:122;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:122 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:122;
- 25 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 30 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:121.
- 35

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (ba) SEQ ID NO:119, but excluding the poly(A) tail at the 3' end of SEQ ID NO:119; and

(bb) the nucleotide sequence of the cDNA insert of clone BG219_2 deposited with the ATCC under accession number 98271;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

10 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:119, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:119 to a nucleotide
15 sequence corresponding to the 3' end of SEQ ID NO:119, but excluding the poly(A) tail at the 3' end of SEQ ID NO:119. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:119 from nucleotide 225 to nucleotide 701, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:119 from nucleotide 225 to nucleotide
20 701, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:119 from nucleotide 225 to nucleotide 701.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:120;
25 (b) the amino acid sequence of SEQ ID NO:120 from amino acid 1 to amino acid 97;

(c) a fragment of the amino acid sequence of SEQ ID NO:120, the fragment comprising eight contiguous amino acids of SEQ ID NO:120; and

(d) the amino acid sequence encoded by the cDNA insert of clone BG219_2
30 deposited with the ATCC under accession number 98271;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:120 or the amino acid sequence of SEQ ID NO:120 from amino acid 1 to amino acid 97. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID
35 NO:120 having biological activity, the fragment preferably comprising eight (more preferably

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:119.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:119
5 from nucleotide 225 to nucleotide 701; the nucleotide sequence of the full-length protein coding sequence of clone BG219_2 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone BG219_2 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BG219_2
10 deposited with the ATCC under accession number 98271. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:120 from amino acid 1 to amino acid 97. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:120 having biological activity, the fragment
15 preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:120, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:120 having biological activity, the fragment comprising the amino acid sequence from amino acid 74 to amino acid 83 of SEQ ID NO:120.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
20 NO:119.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X
25 SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:119, but excluding the poly(A) tail at the 3' end of SEQ ID NO:119; and
 - (ab) the nucleotide sequence of the cDNA insert of clone
30 BG219_2 deposited with the ATCC under accession number 98271;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- 35 (b) a process comprising the steps of:

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:117 or the amino acid sequence of SEQ ID NO:117 from amino acid 119 to amino acid 200. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:117 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:117, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:117 having biological activity, the fragment comprising the amino acid sequence from amino acid 95 to amino acid 104 of SEQ ID NO:117.

10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:119;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:119 from nucleotide 225 to nucleotide 701;
- 15 (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BG219_2 deposited with the ATCC under accession number 98271;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BG219_2 deposited with the ATCC under accession number 98271;
- 20 (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BG219_2 deposited with the ATCC under accession number 98271;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BG219_2 deposited with the ATCC under accession number 98271;
- 25 (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:120;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:120 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:120;
- 30 (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of
- 35 the polynucleotides specified in (a)-(h); and

(bc) the nucleotide sequence of the cDNA insert of clone BG132_1 deposited with the ATCC under accession number 98271;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

5 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:116 and SEQ ID NO:118, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:116 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:118, but excluding the poly(A) tail at the 3' end of SEQ ID NO:118. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:116, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:116 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:116. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:116 from nucleotide 2 to nucleotide 601, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:116 from nucleotide 2 to nucleotide 601, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:116 from nucleotide 2 to nucleotide 601. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:116 from nucleotide 401 to nucleotide 601, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:116 from nucleotide 401 to nucleotide 601, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:116 from nucleotide 401 to nucleotide 601.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:117;

30 (b) the amino acid sequence of SEQ ID NO:117 from amino acid 119 to amino acid 200;

(c) a fragment of the amino acid sequence of SEQ ID NO:117, the fragment comprising eight contiguous amino acids of SEQ ID NO:117; and

(d) the amino acid sequence encoded by the cDNA insert of clone BG132_1 deposited with the ATCC under accession number 98271;

mature protein encoded by the cDNA insert of clone BG132_1 deposited with the ATCC under accession number 98271. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:117 from amino acid 119 to amino acid 200. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:117 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:117, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:117 having biological activity, the fragment comprising the amino acid sequence from amino acid 95 to amino acid 104 of SEQ ID NO:117.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:116 and SEQ ID NO:118.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 15 (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 20 (aa) SEQ ID NO:116;
 - (ab) SEQ ID NO:118, but excluding the poly(A) tail at the 3' end of SEQ ID NO:118; and
 - (ac) the nucleotide sequence of the cDNA insert of clone BG132_1 deposited with the ATCC under accession number 98271;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 25 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - 30 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (ba) SEQ ID NO:116;
 - (bb) SEQ ID NO:118, but excluding the poly(A) tail at the 3' end of SEQ ID NO:118; and

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:116;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:116 from nucleotide 2 to nucleotide 601;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:116 from nucleotide 401 to nucleotide 601;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BG132_1 deposited with the ATCC under accession number 98271;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BG132_1 deposited with the ATCC under accession number 98271;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BG132_1 deposited with the ATCC under accession number 98271;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BG132_1 deposited with the ATCC under accession number 98271;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:117;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:117 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:117;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:116.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:116 from nucleotide 2 to nucleotide 601; the nucleotide sequence of SEQ ID NO:116 from nucleotide 401 to nucleotide 601; the nucleotide sequence of the full-length protein coding sequence of clone BG132_1 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone BG132_1 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a

according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:114, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:114 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:114, but excluding the poly(A) tail at the 3' end of SEQ ID NO:114. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:114 from nucleotide 19 to nucleotide 262, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:114 from nucleotide 19 to nucleotide 262, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:114 from nucleotide 19 to nucleotide 262. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:114 from nucleotide 91 to nucleotide 262, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:114 from nucleotide 91 to nucleotide 262, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:114 from nucleotide 91 to nucleotide 262.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:115;
 - (b) the amino acid sequence of SEQ ID NO:115 from amino acid 1 to amino acid 66;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:115, the fragment comprising eight contiguous amino acids of SEQ ID NO:115; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone AT340_1 deposited with the ATCC under accession number 98271;
- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:115 or the amino acid sequence of SEQ ID NO:115 from amino acid 1 to amino acid 66. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:115 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:115, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:115 having biological activity, the fragment comprising the amino acid sequence from amino acid 35 to amino acid 44 of SEQ ID NO:115.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:114 and SEQ ID NO:113.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 5 (a) a process comprising the steps of:
- (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (aa) SEQ ID NO:113;
- 10 (ab) SEQ ID NO:114, but excluding the poly(A) tail at the 3' end of SEQ ID NO:114; and
- (ac) the nucleotide sequence of the cDNA insert of clone AT340_1 deposited with the ATCC under accession number 98271;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions
- 15 at least as stringent as 4X SSC at 50 degrees C; and
- (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in
- 20 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (ba) SEQ ID NO:113;
- (bb) SEQ ID NO:114, but excluding the poly(A) tail at the 3' end of SEQ ID NO:114; and
- 25 (bc) the nucleotide sequence of the cDNA insert of clone AT340_1 deposited with the ATCC under accession number 98271;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- 30 (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:113 and SEQ ID NO:114, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:113 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:114, but excluding

35 the poly(A) tail at the 3' end of SEQ ID NO:114. Also preferably the polynucleotide isolated

- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AT340_1 deposited with the ATCC under accession number 98271;
- 5 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AT340_1 deposited with the ATCC under accession number 98271;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:115;
- 10 (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:115 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:115;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 15 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:114.
- 20 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:114 from nucleotide 19 to nucleotide 262; the nucleotide sequence of SEQ ID NO:114 from nucleotide 91 to nucleotide 262; the nucleotide sequence of the full-length protein coding sequence of clone AT340_1 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone AT340_1 deposited with the ATCC under accession
- 25 number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AT340_1 deposited with the ATCC under accession number 98271. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:115 from amino acid 1 to amino acid 66. In further preferred embodiments, the present invention provides
- 30 a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:115 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:115, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:115 having biological activity, the fragment comprising the amino acid sequence from amino acid 35 to amino
- 35 acid 44 of SEQ ID NO:115.

and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:111 from nucleotide 78 to nucleotide 476, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:111 from nucleotide 78 to nucleotide 476.

5 In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:112;
- (b) the amino acid sequence of SEQ ID NO:112 from amino acid 1 to amino acid 112;
- 10 (c) a fragment of the amino acid sequence of SEQ ID NO:112, the fragment comprising eight contiguous amino acids of SEQ ID NO:112; and
- (d) the amino acid sequence encoded by the cDNA insert of clone AM795_4 deposited with the ATCC under accession number 98271;

the protein being substantially free from other mammalian proteins. Preferably such protein
15 comprises the amino acid sequence of SEQ ID NO:112 or the amino acid sequence of SEQ ID NO:112 from amino acid 1 to amino acid 112. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:112 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:112, or a protein
20 comprising a fragment of the amino acid sequence of SEQ ID NO:112 having biological activity, the fragment comprising the amino acid sequence from amino acid 227 to amino acid 236 of SEQ ID NO:112.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- 25 (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:114;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:114 from nucleotide 19 to nucleotide 262;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:114 from nucleotide 91 to nucleotide 262;
- 30 (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AT340_1 deposited with the ATCC under accession number 98271;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AT340_1 deposited with the ATCC under accession number 98271;

- (ab) the nucleotide sequence of the cDNA insert of clone AM795_4 deposited with the ATCC under accession number 98271;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- 5 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
- 10 consisting of:
- (ba) SEQ ID NO:111, but excluding the poly(A) tail at the 3' end of SEQ ID NO:111; and
- (bb) the nucleotide sequence of the cDNA insert of clone AM795_4 deposited with the ATCC under accession number 98271;
- 15 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).
- Preferably the polynucleotide isolated according to the above process comprises a nucleotide
- 20 sequence corresponding to the cDNA sequence of SEQ ID NO:111, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:111 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:111, but excluding the poly(A) tail at the 3' end of SEQ ID NO:111. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:111
- 25 from nucleotide 141 to nucleotide 1532, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:111 from nucleotide 141 to nucleotide 1532, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:111 from nucleotide 141 to nucleotide 1532. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of
- 30 SEQ ID NO:111 from nucleotide 204 to nucleotide 1532, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:111 from nucleotide 204 to nucleotide 1532, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:111 from nucleotide 204 to nucleotide 1532. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence
- 35 corresponding to the cDNA sequence of SEQ ID NO:111 from nucleotide 78 to nucleotide 476,

(l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and

5 (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:111.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:111 from nucleotide 141 to nucleotide 1532; the nucleotide sequence of SEQ ID NO:111 from
10 nucleotide 204 to nucleotide 1532; the nucleotide sequence of SEQ ID NO:111 from nucleotide 78 to nucleotide 476; the nucleotide sequence of the full-length protein coding sequence of clone AM795_4 deposited with the ATCC under accession number 98271; or the nucleotide sequence of a mature protein coding sequence of clone AM795_4 deposited with the ATCC under accession number 98271. In other preferred embodiments, the polynucleotide encodes the full-length or a
15 mature protein encoded by the cDNA insert of clone AM795_4 deposited with the ATCC under accession number 98271. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:112 from amino acid 1 to amino acid 112. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ
20 ID NO:112 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:112, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:112 having biological activity, the fragment comprising the amino acid sequence from amino acid 227 to amino acid 236 of SEQ ID NO:112.

25 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:111.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:
30 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:111, but excluding the poly(A) tail at the 3' end of SEQ ID NO:111; and

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:109. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:109 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:109, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:109 having biological activity, the fragment comprising the amino acid sequence from amino acid 18 to amino acid 27 of SEQ ID NO:109.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:111;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:111 from nucleotide 141 to nucleotide 1532;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:111 from nucleotide 204 to nucleotide 1532;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:111 from nucleotide 78 to nucleotide 476;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AM795_4 deposited with the ATCC under accession number 98271;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AM795_4 deposited with the ATCC under accession number 98271;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AM795_4 deposited with the ATCC under accession number 98271;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AM795_4 deposited with the ATCC under accession number 98271;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:112;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:112 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:112;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:107;

5 (bb) SEQ ID NO:108;

(bc) SEQ ID NO:110, but excluding the poly(A) tail at the 3' end of SEQ ID NO:110; and

(bd) the nucleotide sequence of the cDNA insert of clone CJ397_1 deposited with the ATCC under accession number 98264;

10 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide
15 sequence corresponding to the cDNA sequences of SEQ ID NO:107, SEQ ID NO:108, and SEQ ID NO:110, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:107 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:110, but excluding the poly(A) tail at the 3' end of SEQ ID NO:110. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the
20 cDNA sequence of SEQ ID NO:108, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:108 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:108. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:108 from nucleotide 471 to nucleotide 611, and extending contiguously from a nucleotide sequence
25 corresponding to the 5' end of said sequence of SEQ ID NO:108 from nucleotide 471 to nucleotide 611, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:108 from nucleotide 471 to nucleotide 611.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

30 (a) the amino acid sequence of SEQ ID NO:109;

(b) a fragment of the amino acid sequence of SEQ ID NO:109, the fragment comprising eight contiguous amino acids of SEQ ID NO:109; and

(c) the amino acid sequence encoded by the cDNA insert of clone CJ397_1 deposited with the ATCC under accession number 98264;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:108.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:108
5 from nucleotide 471 to nucleotide 611; the nucleotide sequence of the full-length protein coding sequence of clone CJ397_1 deposited with the ATCC under accession number 98264; or the nucleotide sequence of a mature protein coding sequence of clone CJ397_1 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CJ397_1
10 deposited with the ATCC under accession number 98264. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:109 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:109, or a polynucleotide encoding a protein comprising a fragment of the amino acid
15 sequence of SEQ ID NO:109 having biological activity, the fragment comprising the amino acid sequence from amino acid 18 to amino acid 27 of SEQ ID NO:109.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:108, SEQ ID NO:107, and SEQ ID NO:110.

Further embodiments of the invention provide isolated polynucleotides produced
20 according to a process selected from the group consisting of:

(a) a process comprising the steps of:
(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

25 (aa) SEQ ID NO:107;
(ab) SEQ ID NO:108;
(ac) SEQ ID NO:110, but excluding the poly(A) tail at the 3' end of SEQ ID NO:110; and
(ad) the nucleotide sequence of the cDNA insert of clone
30 CJ397_1 deposited with the ATCC under accession number 98264;
(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
(iii) isolating the DNA polynucleotides detected with the probe(s);

and

35 (b) a process comprising the steps of:

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:106. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:106 having biological activity, the fragment preferably comprising eight (more preferably
5 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:106, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:106 having biological activity, the fragment comprising the amino acid sequence from amino acid 11 to amino acid 20 of SEQ ID NO:106.

In one embodiment, the present invention provides a composition comprising an isolated
10 polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:108;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:108 from nucleotide 471 to nucleotide 611;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length
15 protein coding sequence of clone CJ397_1 deposited with the ATCC under accession number 98264;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CJ397_1 deposited with the ATCC under accession number 98264;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein
20 coding sequence of clone CJ397_1 deposited with the ATCC under accession number 98264;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CJ397_1 deposited with the ATCC under accession number 98264;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence
25 of SEQ ID NO:109;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:109 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:109;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f)
30 above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (ba) SEQ ID NO:105, but excluding the poly(A) tail at the 3' end of SEQ ID NO:105; and

(bb) the nucleotide sequence of the cDNA insert of clone CG109_1 deposited with the ATCC under accession number 98264;

10 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:105, and extending contiguously
15 from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:105 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:105, but excluding the poly(A) tail at the 3' end of SEQ ID NO:105. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:105 from nucleotide 311 to nucleotide 409, and extending contiguously from a nucleotide sequence
20 corresponding to the 5' end of said sequence of SEQ ID NO:105 from nucleotide 311 to nucleotide 409, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:105 from nucleotide 311 to nucleotide 409. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:105 from nucleotide 24 to nucleotide 414, and extending contiguously from a nucleotide
25 sequence corresponding to the 5' end of said sequence of SEQ ID NO:105 from nucleotide 24 to nucleotide 414, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:105 from nucleotide 24 to nucleotide 414.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

30 (a) the amino acid sequence of SEQ ID NO:106;

(b) a fragment of the amino acid sequence of SEQ ID NO:106, the fragment comprising eight contiguous amino acids of SEQ ID NO:106; and

(c) the amino acid sequence encoded by the cDNA insert of clone CG109_1 deposited with the ATCC under accession number 98264;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:105.

5 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:105 from nucleotide 311 to nucleotide 409; the nucleotide sequence of SEQ ID NO:105 from nucleotide 24 to nucleotide 414; the nucleotide sequence of the full-length protein coding sequence of clone CG109_1 deposited with the ATCC under accession number 98264; or the
10 nucleotide sequence of a mature protein coding sequence of clone CG109_1 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CG109_1 deposited with the ATCC under accession number 98264. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the
15 amino acid sequence of SEQ ID NO:106 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:106, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:106 having biological activity, the fragment comprising the amino acid sequence from amino acid 11 to amino acid 20 of SEQ ID NO:106.

20 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:105.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
- 25 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
- (aa) SEQ ID NO:105, but excluding the poly(A) tail at the 3' end of SEQ ID NO:105; and
- 30 (ab) the nucleotide sequence of the cDNA insert of clone CG109_1 deposited with the ATCC under accession number 98264;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
- (iii) isolating the DNA polynucleotides detected with the probe(s);

35 and

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:104 or the amino acid sequence of SEQ ID NO:104 from amino acid 1 to amino acid 60. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:104 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:104, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:104 having biological activity, the fragment comprising the amino acid sequence from amino acid 38 to amino acid 47 of SEQ ID NO:104.

10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:105;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:105 from nucleotide 311 to nucleotide 409;
- 15 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:105 from nucleotide 24 to nucleotide 414;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CG109_1 deposited with the ATCC under accession number 98264;
- 20 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CG109_1 deposited with the ATCC under accession number 98264;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CG109_1 deposited with the ATCC under accession number 98264;
- 25 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CG109_1 deposited with the ATCC under accession number 98264;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:106;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:106 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:106;
- 30 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 35

- (bb) the nucleotide sequence of the cDNA insert of clone CC182_1 deposited with the ATCC under accession number 98264;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- 5 (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:103, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:103 to a nucleotide
10 sequence corresponding to the 3' end of SEQ ID NO:103, but excluding the poly(A) tail at the 3' end of SEQ ID NO:103. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:103 from nucleotide 405 to nucleotide 662, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:103 from nucleotide 405 to nucleotide
15 662, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:103 from nucleotide 405 to nucleotide 662. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:103 from nucleotide 519 to nucleotide 662, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:103 from nucleotide 519
20 to nucleotide 662, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:103 from nucleotide 519 to nucleotide 662. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:103 from nucleotide 1 to nucleotide 584, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:103 from
25 nucleotide 1 to nucleotide 584, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:103 from nucleotide 1 to nucleotide 584.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:104;
- 30 (b) the amino acid sequence of SEQ ID NO:104 from amino acid 1 to amino acid 60;
- (c) a fragment of the amino acid sequence of SEQ ID NO:104, the fragment comprising eight contiguous amino acids of SEQ ID NO:104; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CC182_1
35 deposited with the ATCC under accession number 98264;

CC182_1 deposited with the ATCC under accession number 98264; or the nucleotide sequence of a mature protein coding sequence of clone CC182_1 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CC182_1 deposited with the ATCC under
5 accession number 98264. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:104 from amino acid 1 to amino acid 60. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:104 having biological activity, the fragment preferably comprising eight (more preferably
10 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:104, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:104 having biological activity, the fragment comprising the amino acid sequence from amino acid 38 to amino acid 47 of SEQ ID NO:104.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
15 NO:103.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X
20 SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:103, but excluding the poly(A) tail at the 3' end of SEQ ID NO:103; and
 - (ab) the nucleotide sequence of the cDNA insert of clone
25 CC182_1 deposited with the ATCC under accession number 98264;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in
30 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (ba) SEQ ID NO:103, but excluding the poly(A) tail at the 3'
35 end of SEQ ID NO:103; and

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:103;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:103 from nucleotide 405 to nucleotide 662;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:103 from nucleotide 519 to nucleotide 662;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:103 from nucleotide 1 to nucleotide 584;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CC182_1 deposited with the ATCC under accession number 98264;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CC182_1 deposited with the ATCC under accession number 98264;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CC182_1 deposited with the ATCC under accession number 98264;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CC182_1 deposited with the ATCC under accession number 98264;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:104;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:104 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:104;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:103.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:103 from nucleotide 405 to nucleotide 662; the nucleotide sequence of SEQ ID NO:103 from nucleotide 519 to nucleotide 662; the nucleotide sequence of SEQ ID NO:103 from nucleotide 1 to nucleotide 584; the nucleotide sequence of the full-length protein coding sequence of clone

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:100 and SEQ ID NO:101, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:100 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:101, but excluding the poly(A) tail at the 3' end of SEQ ID NO:101. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:101, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:101 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:101, but excluding the poly(A) tail at the 3' end of SEQ ID NO:101. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:101 from nucleotide 72 to nucleotide 569, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:101 from nucleotide 72 to nucleotide 569, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:101 from nucleotide 72 to nucleotide 569.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:102;
 - (b) the amino acid sequence of SEQ ID NO:102 from amino acid 1 to amino acid 124;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:102, the fragment comprising eight contiguous amino acids of SEQ ID NO:102; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone BZ16_3 deposited with the ATCC under accession number 98264;
- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:102 or the amino acid sequence of SEQ ID NO:102 from amino acid 1 to amino acid 124. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:102 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:102, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:102 having biological activity, the fragment comprising the amino acid sequence from amino acid 78 to amino acid 87 of SEQ ID NO:102.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:102, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:102 having biological activity, the fragment comprising the amino acid sequence from amino acid 78 to amino acid 87 of SEQ ID NO:102.

5 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:101 and SEQ ID NO:100.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - 10 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:100;
 - (ab) SEQ ID NO:101, but excluding the poly(A) tail at the 3'
 - 15 end of SEQ ID NO:101; and
 - (ac) the nucleotide sequence of the cDNA insert of clone BZ16_3 deposited with the ATCC under accession number 98264;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 20 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
 - 25 consisting of:
 - (ba) SEQ ID NO:100;
 - (bb) SEQ ID NO:101, but excluding the poly(A) tail at the 3'
 - end of SEQ ID NO:101; and
 - (bc) the nucleotide sequence of the cDNA insert of clone
 - 30 BZ16_3 deposited with the ATCC under accession number 98264;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BZ16_3 deposited with the ATCC under accession number 98264;
- 5 (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BZ16_3 deposited with the ATCC under accession number 98264;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BZ16_3 deposited with the ATCC under accession number 98264;
- 10 (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BZ16_3 deposited with the ATCC under accession number 98264;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:102;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:102 having biological activity, the fragment comprising 15 eight contiguous amino acids of SEQ ID NO:102;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- 20 (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:101.
- 25 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:101 from nucleotide 72 to nucleotide 569; the nucleotide sequence of the full-length protein coding sequence of clone BZ16_3 deposited with the ATCC under accession number 98264; or the nucleotide sequence of a mature protein coding sequence of clone BZ16_3 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide 30 encodes the full-length or a mature protein encoded by the cDNA insert of clone BZ16_3 deposited with the ATCC under accession number 98264. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:102 from amino acid 1 to amino acid 124. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a 35 fragment of the amino acid sequence of SEQ ID NO:102 having biological activity, the fragment

- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:97 and SEQ ID NO:99, and
5 extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:97 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:99, but excluding the poly(A) tail at the 3' end of SEQ ID NO:99. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:97, and extending contiguously from a nucleotide sequence corresponding to the 5' end of
10 SEQ ID NO:97 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:97. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:97 from nucleotide 16 to nucleotide 492, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:97 from nucleotide 16 to nucleotide 492, to a nucleotide
15 sequence corresponding to the 3' end of said sequence of SEQ ID NO:97 from nucleotide 16 to nucleotide 492.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:98;
- 20 (b) a fragment of the amino acid sequence of SEQ ID NO:98, the fragment comprising eight contiguous amino acids of SEQ ID NO:98; and
- (c) the amino acid sequence encoded by the cDNA insert of clone BP163_1 deposited with the ATCC under accession number 98264;

the protein being substantially free from other mammalian proteins. Preferably such protein
25 comprises the amino acid sequence of SEQ ID NO:98. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:98 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:98, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:98 having biological activity, the fragment
30 comprising the amino acid sequence from amino acid 74 to amino acid 83 of SEQ ID NO:98.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:101;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:101
35 from nucleotide 72 to nucleotide 569;

deposited with the ATCC under accession number 98264. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:98 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:98, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:98 having biological activity, the fragment comprising the amino acid sequence from amino acid 74 to amino acid 83 of SEQ ID NO:98.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:97 and SEQ ID NO:99.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

15

- (aa) SEQ ID NO:97;

- (ab) SEQ ID NO:99, but excluding the poly(A) tail at the 3' end of SEQ ID NO:99; and

20

- (ac) the nucleotide sequence of the cDNA insert of clone BP163_1 deposited with the ATCC under accession number 98264;

- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

- (iii) isolating the DNA polynucleotides detected with the probe(s);

and

25

- (b) a process comprising the steps of:

- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

30

- (ba) SEQ ID NO:97;

- (bb) SEQ ID NO:99, but excluding the poly(A) tail at the 3' end of SEQ ID NO:99; and

- (bc) the nucleotide sequence of the cDNA insert of clone BP163_1 deposited with the ATCC under accession number 98264;

35

- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:97;
 - (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:97
5 from nucleotide 16 to nucleotide 492;
 - (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BP163_1 deposited with the ATCC under accession number 98264;
 - (d) a polynucleotide encoding the full-length protein encoded by the cDNA
10 insert of clone BP163_1 deposited with the ATCC under accession number 98264;
 - (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BP163_1 deposited with the ATCC under accession number 98264;
 - (f) a polynucleotide encoding a mature protein encoded by the cDNA insert
15 of clone BP163_1 deposited with the ATCC under accession number 98264;
 - (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:98;
 - (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:98 having biological activity, the fragment comprising eight
20 contiguous amino acids of SEQ ID NO:98;
 - (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
 - (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
 - (k) a polynucleotide that hybridizes under stringent conditions to any one of
25 the polynucleotides specified in (a)-(h); and
 - (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:97.
- 30 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:97 from nucleotide 16 to nucleotide 492; the nucleotide sequence of the full-length protein coding sequence of clone BP163_1 deposited with the ATCC under accession number 98264; or the nucleotide sequence of a mature protein coding sequence of clone BP163_1 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide
35 encodes the full-length or a mature protein encoded by the cDNA insert of clone BP163_1

- (bb) the nucleotide sequence of the cDNA insert of clone BK158_1 deposited with the ATCC under accession number 98264;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- 5 (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:95, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:95 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:95, but excluding the poly(A) tail at the 3' end of SEQ ID NO:95. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:95 from nucleotide 112 to nucleotide 978, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:95 from nucleotide 112 to nucleotide 978, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:95 from nucleotide 112 to nucleotide 978. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:95 from nucleotide 436 to nucleotide 1048, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:95 from nucleotide 436 to nucleotide 1048, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:95 from nucleotide 436 to nucleotide 1048.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:96;
- 25 (b) a fragment of the amino acid sequence of SEQ ID NO:96, the fragment comprising eight contiguous amino acids of SEQ ID NO:96; and
- (c) the amino acid sequence encoded by the cDNA insert of clone BK158_1 deposited with the ATCC under accession number 98264;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:96. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:96 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:96, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:96 having biological activity, the fragment comprising the amino acid sequence from amino acid 139 to amino acid 148 of SEQ ID NO:96.

nucleotide 436 to nucleotide 1048; the nucleotide sequence of the full-length protein coding sequence of clone BK158_1 deposited with the ATCC under accession number 98264; or the nucleotide sequence of a mature protein coding sequence of clone BK158_1 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide
5 encodes the full-length or a mature protein encoded by the cDNA insert of clone BK158_1 deposited with the ATCC under accession number 98264. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:96 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ
10 ID NO:96, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:96 having biological activity, the fragment comprising the amino acid sequence from amino acid 139 to amino acid 148 of SEQ ID NO:96.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:95.

15 Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X
20 SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:95, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:95; and

(ab) the nucleotide sequence of the cDNA insert of clone
BK158_1 deposited with the ATCC under accession number 98264;

25 (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

30 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:95, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:95; and

fragment of the amino acid sequence of SEQ ID NO:94 having biological activity, the fragment comprising the amino acid sequence from amino acid 21 to amino acid 30 of SEQ ID NO:94.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- 5 (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:95;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:95 from nucleotide 112 to nucleotide 978;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:95 from nucleotide 436 to nucleotide 1048;
- 10 (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BK158_1 deposited with the ATCC under accession number 98264;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BK158_1 deposited with the ATCC under accession number 98264;
- 15 (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BK158_1 deposited with the ATCC under accession number 98264;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BK158_1 deposited with the ATCC under accession number 98264;
- 20 (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:96;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:96 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:96;
- 25 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- 30 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:95.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:95 from nucleotide 112 to nucleotide 978; the nucleotide sequence of SEQ ID NO:95 from

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:93, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:93 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:93, but excluding the poly(A) tail at the 3' end of SEQ ID NO:93. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:93 from nucleotide 426 to nucleotide 581, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:93 from nucleotide 426 to nucleotide 581, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:93 from nucleotide 426 to nucleotide 581. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:93 from nucleotide 495 to nucleotide 581, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:93 from nucleotide 495 to nucleotide 581, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:93 from nucleotide 495 to nucleotide 581. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:93 from nucleotide 354 to nucleotide 503, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:93 from nucleotide 354 to nucleotide 503, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:93 from nucleotide 354 to nucleotide 503.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:94;
 - (b) the amino acid sequence of SEQ ID NO:94 from amino acid 1 to amino acid 26;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:94, the fragment comprising eight contiguous amino acids of SEQ ID NO:94; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone BG102_3 deposited with the ATCC under accession number 98264;
- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:94 or the amino acid sequence of SEQ ID NO:94 from amino acid 1 to amino acid 26. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:94 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:94, or a protein comprising a

a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:94 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:94, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:94 having biological activity, the fragment comprising the amino acid sequence from amino acid 21 to amino acid 30 of SEQ ID NO:94.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:93.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (aa) SEQ ID NO:93, but excluding the poly(A) tail at the 3' end of SEQ ID NO:93; and

- (ab) the nucleotide sequence of the cDNA insert of clone BG102_3 deposited with the ATCC under accession number 98264;

- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

- (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:

- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (ba) SEQ ID NO:93, but excluding the poly(A) tail at the 3' end of SEQ ID NO:93; and

- (bb) the nucleotide sequence of the cDNA insert of clone BG102_3 deposited with the ATCC under accession number 98264;

- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

- (iii) amplifying human DNA sequences; and

- (iv) isolating the polynucleotide products of step (b)(iii).

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- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BG102_3 deposited with the ATCC under accession number 98264;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BG102_3 deposited with the ATCC under accession number 98264;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BG102_3 deposited with the ATCC under accession number 98264;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BG102_3 deposited with the ATCC under accession number 98264;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:94;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:94 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:94;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:93.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:93 from nucleotide 426 to nucleotide 581; the nucleotide sequence of SEQ ID NO:93 from nucleotide 495 to nucleotide 581; the nucleotide sequence of SEQ ID NO:93 from nucleotide 354 to nucleotide 503; the nucleotide sequence of the full-length protein coding sequence of clone BG102_3 deposited with the ATCC under accession number 98264; or the nucleotide sequence of a mature protein coding sequence of clone BG102_3 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BG102_3 deposited with the ATCC under accession number 98264. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:94 from amino acid 1 to amino acid 26. In further preferred embodiments, the present invention provides

to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:92, but excluding the poly(A) tail at the 3' end of SEQ ID NO:92. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:90, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:90 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:90. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:90 from nucleotide 583 to nucleotide 756, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:90 from nucleotide 583 to nucleotide 756, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:90 from nucleotide 583 to nucleotide 756.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:91;
- (b) a fragment of the amino acid sequence of SEQ ID NO:91, the fragment comprising eight contiguous amino acids of SEQ ID NO:91; and
- (c) the amino acid sequence encoded by the cDNA insert of clone BD441_2 deposited with the ATCC under accession number 98264;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:91. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:91 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:91, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:91 having biological activity, the fragment comprising the amino acid sequence from amino acid 24 to amino acid 33 of SEQ ID NO:91.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:93;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:93 from nucleotide 426 to nucleotide 581;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:93 from nucleotide 495 to nucleotide 581;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:93 from nucleotide 354 to nucleotide 503;

sequence of SEQ ID NO:91 having biological activity, the fragment comprising the amino acid sequence from amino acid 24 to amino acid 33 of SEQ ID NO:91.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:90 and SEQ ID NO:92.

5 Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X
SSC at 65 degrees C to a nucleotide sequence selected from the group consisting
10 of:

(aa) SEQ ID NO:90;

(ab) SEQ ID NO:92, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:92; and

(ac) the nucleotide sequence of the cDNA insert of clone
15 BD441_2 deposited with the ATCC under accession number 98264;

(ii) hybridizing said probe(s) to human genomic DNA in conditions
at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

20 (b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in
6X SSC at 65 degrees C to a nucleotide sequence selected from the group
consisting of:

(ba) SEQ ID NO:90;

(bb) SEQ ID NO:92, but excluding the poly(A) tail at the 3'
25 end of SEQ ID NO:92; and

(bc) the nucleotide sequence of the cDNA insert of clone
BD441_2 deposited with the ATCC under accession number 98264;

(ii) hybridizing said primer(s) to human genomic DNA in conditions
30 at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide
sequence corresponding to the cDNA sequences of SEQ ID NO:90 and SEQ ID NO:92, and
35 extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:90

- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BD441_2 deposited with the ATCC under accession number 98264;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BD441_2 deposited with the ATCC under accession number 98264;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BD441_2 deposited with the ATCC under accession number 98264;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BD441_2 deposited with the ATCC under accession number 98264;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:91;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:91 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:91;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:90.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:90 from nucleotide 583 to nucleotide 756; the nucleotide sequence of the full-length protein coding sequence of clone BD441_2 deposited with the ATCC under accession number 98264; or the nucleotide sequence of a mature protein coding sequence of clone BD441_2 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BD441_2 deposited with the ATCC under accession number 98264. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:91 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:91, or a polynucleotide encoding a protein comprising a fragment of the amino acid

- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:86, SEQ ID NO:87, and SEQ ID NO:89, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:86 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:89, but excluding the poly(A) tail at the 3' end of SEQ ID NO:89. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:87, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:87 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:87. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:87 from nucleotide 390 to nucleotide 563, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:87 from nucleotide 390 to nucleotide 563, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:87 from nucleotide 390 to nucleotide 563.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:88;
- (b) a fragment of the amino acid sequence of SEQ ID NO:88, the fragment comprising eight contiguous amino acids of SEQ ID NO:88; and
- (c) the amino acid sequence encoded by the cDNA insert of clone BD441_1 deposited with the ATCC under accession number 98264;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:88. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:88 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:88, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:88 having biological activity, the fragment comprising the amino acid sequence from amino acid 24 to amino acid 33 of SEQ ID NO:88.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:90;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:90 from nucleotide 583 to nucleotide 756;

comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:88, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:88 having biological activity, the fragment comprising the amino acid sequence from amino acid 24 to amino acid 33 of SEQ ID NO:88.

5 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:87, SEQ ID NO:86, and SEQ ID NO:89.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - 10 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:86;
 - (ab) SEQ ID NO:87;
 - 15 (ac) SEQ ID NO:89, but excluding the poly(A) tail at the 3' end of SEQ ID NO:89; and
 - (ad) the nucleotide sequence of the cDNA insert of clone BD441_1 deposited with the ATCC under accession number 98264;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions
 - 20 at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in
 - 25 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (ba) SEQ ID NO:86;
 - (bb) SEQ ID NO:87;
 - (bc) SEQ ID NO:89, but excluding the poly(A) tail at the 3' end of SEQ ID NO:89; and
 - 30 (bd) the nucleotide sequence of the cDNA insert of clone BD441_1 deposited with the ATCC under accession number 98264;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions
 - at least as stringent as 4X SSC at 50 degrees C;
 - 35 (iii) amplifying human DNA sequences; and

- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:87 from nucleotide 390 to nucleotide 563;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BD441_1 deposited with the ATCC under accession number 98264;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BD441_1 deposited with the ATCC under accession number 98264;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BD441_1 deposited with the ATCC under accession number 98264;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BD441_1 deposited with the ATCC under accession number 98264;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:88;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:88 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:88;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:87.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:87 from nucleotide 390 to nucleotide 563; the nucleotide sequence of the full-length protein coding sequence of clone BD441_1 deposited with the ATCC under accession number 98264; or the nucleotide sequence of a mature protein coding sequence of clone BD441_1 deposited with the ATCC under accession number 98264. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BD441_1 deposited with the ATCC under accession number 98264. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:88 having biological activity, the fragment preferably

corresponding to the 3' end of SEQ ID NO:84, but excluding the poly(A) tail at the 3' end of SEQ ID NO:84. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:84 from nucleotide 43 to nucleotide 297, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:84 from nucleotide 43 to nucleotide 297, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:84 from nucleotide 43 to nucleotide 297. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:84 from nucleotide 94 to nucleotide 297, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:84 from nucleotide 94 to nucleotide 297, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:84 from nucleotide 94 to nucleotide 297. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:84 from nucleotide 1 to nucleotide 379, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:84 from nucleotide 1 to nucleotide 379, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:84 from nucleotide 1 to nucleotide 379.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:85;
 - (b) a fragment of the amino acid sequence of SEQ ID NO:85, the fragment comprising eight contiguous amino acids of SEQ ID NO:85; and
 - (c) the amino acid sequence encoded by the cDNA insert of clone CH377_1 deposited with the ATCC under accession number 98261;
- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:85. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:85 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:85, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:85 having biological activity, the fragment comprising the amino acid sequence from amino acid 37 to amino acid 46 of SEQ ID NO:85.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:87;

twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:85, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:85 having biological activity, the fragment comprising the amino acid sequence from amino acid 37 to amino acid 46 of SEQ ID NO:85.

5 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:84.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - 10 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:84, but excluding the poly(A) tail at the 3' end of SEQ ID NO:84; and
 - 15 (ab) the nucleotide sequence of the cDNA insert of clone CH377_1 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
 - 20 and
 - (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 25 (ba) SEQ ID NO:84, but excluding the poly(A) tail at the 3' end of SEQ ID NO:84; and
 - (bb) the nucleotide sequence of the cDNA insert of clone CH377_1 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions
 - 30 at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:84, and extending contiguously
35 from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:84 to a nucleotide sequence

- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CH377_1 deposited with the ATCC under accession number 98261;
- 5 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CH377_1 deposited with the ATCC under accession number 98261;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CH377_1 deposited with the ATCC under accession number 98261;
- 10 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CH377_1 deposited with the ATCC under accession number 98261;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:85;
- 15 (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:85 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:85;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- 20 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:84.
- 25 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:84 from nucleotide 43 to nucleotide 297; the nucleotide sequence of SEQ ID NO:84 from nucleotide 94 to nucleotide 297; the nucleotide sequence of SEQ ID NO:84 from nucleotide 1 to nucleotide 379; the nucleotide sequence of the full-length protein coding sequence of clone CH377_1 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature
- 30 protein coding sequence of clone CH377_1 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CH377_1 deposited with the ATCC under accession number 98261. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID
- 35 NO:85 having biological activity, the fragment preferably comprising eight (more preferably

the 5' end of said sequence of SEQ ID NO:82 from nucleotide 604 to nucleotide 771, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:82 from nucleotide 604 to nucleotide 771. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID
5 NO:82 from nucleotide 1 to nucleotide 684, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:82 from nucleotide 1 to nucleotide 684, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:82 from nucleotide 1 to nucleotide 684.

In other embodiments, the present invention provides a composition comprising a protein,
10 wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:83;
- (b) the amino acid sequence of SEQ ID NO:83 from amino acid 1 to amino acid 27;
- (c) a fragment of the amino acid sequence of SEQ ID NO:83, the fragment
15 comprising eight contiguous amino acids of SEQ ID NO:83; and
- (d) the amino acid sequence encoded by the cDNA insert of clone BV123_16 deposited with the ATCC under accession number 98261;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:83 or the amino acid sequence of SEQ ID
20 NO:83 from amino acid 1 to amino acid 27. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:83 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:83, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:83 having biological activity, the fragment
25 comprising the amino acid sequence from amino acid 23 to amino acid 32 of SEQ ID NO:83.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:84;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:84
30 from nucleotide 43 to nucleotide 297;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:84 from nucleotide 94 to nucleotide 297;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:84 from nucleotide 1 to nucleotide 379;

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:82.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 5 (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 10 (aa) SEQ ID NO:82, but excluding the poly(A) tail at the 3' end of SEQ ID NO:82; and
 - (ab) the nucleotide sequence of the cDNA insert of clone BV123_16 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 15 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 20 (ba) SEQ ID NO:82, but excluding the poly(A) tail at the 3' end of SEQ ID NO:82; and
 - (bb) the nucleotide sequence of the cDNA insert of clone BV123_16 deposited with the ATCC under accession number 98261;
 - 25 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:82, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:82 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:82, but excluding the poly(A) tail at the 3' end of SEQ ID NO:82. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:82 from nucleotide 30 604 to nucleotide 771, and extending contiguously from a nucleotide sequence corresponding to 35

- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BV123_16 deposited with the ATCC under accession number 98261;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert
5 of clone BV123_16 deposited with the ATCC under accession number 98261;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:83;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:83 having biological activity, the fragment comprising eight
10 contiguous amino acids of SEQ ID NO:83;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of
15 the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:82.
- 20 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:82 from nucleotide 604 to nucleotide 771; the nucleotide sequence of SEQ ID NO:82 from nucleotide 1 to nucleotide 684; the nucleotide sequence of the full-length protein coding sequence of clone BV123_16 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone BV123_16 deposited with the ATCC under
25 accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BV123_16 deposited with the ATCC under accession number 98261. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:83 from amino acid 1 to amino acid 27. In further preferred embodiments, the present
30 invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:83 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:83, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:83 having biological activity, the fragment comprising the amino acid sequence from amino
35 acid 23 to amino acid 32 of SEQ ID NO:83.

SEQ ID NO:79 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:79. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:79 from nucleotide 300 to nucleotide 360, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:79 from nucleotide 300 to nucleotide 360, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:79 from nucleotide 300 to nucleotide 360.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- 10 (a) the amino acid sequence of SEQ ID NO:80;
- (b) a fragment of the amino acid sequence of SEQ ID NO:80, the fragment comprising eight contiguous amino acids of SEQ ID NO:80; and
- (c) the amino acid sequence encoded by the cDNA insert of clone BL229_22 deposited with the ATCC under accession number 98261;
- 15 the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:80. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:80 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:80, or a protein comprising
- 20 a fragment of the amino acid sequence of SEQ ID NO:80 having biological activity, the fragment comprising the amino acid sequence from amino acid 5 to amino acid 14 of SEQ ID NO:80.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:82;
- 25 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:82 from nucleotide 604 to nucleotide 771;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:82 from nucleotide 1 to nucleotide 684;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BV123_16 deposited with the ATCC under accession number 98261;
- 30 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BV123_16 deposited with the ATCC under accession number 98261;

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:79;
 - (ab) SEQ ID NO:81, but excluding the poly(A) tail at the 3' end of SEQ ID NO:81; and
 - (ac) the nucleotide sequence of the cDNA insert of clone BL229_22 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (ba) SEQ ID NO:79;
 - (bb) SEQ ID NO:81, but excluding the poly(A) tail at the 3' end of SEQ ID NO:81; and
 - (bc) the nucleotide sequence of the cDNA insert of clone BL229_22 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:79 and SEQ ID NO:81, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:79 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:81, but excluding the poly(A) tail at the 3' end of SEQ ID NO:81. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:79, and extending contiguously from a nucleotide sequence corresponding to the 5' end of

- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BL229_22 deposited with the ATCC under accession number 98261;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BL229_22 deposited with the ATCC under accession number 98261;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:80;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:80 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:80;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:79.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:79 from nucleotide 300 to nucleotide 360; the nucleotide sequence of the full-length protein coding sequence of clone BL229_22 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone BL229_22 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BL229_22 deposited with the ATCC under accession number 98261. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:80 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:80, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:80 having biological activity, the fragment comprising the amino acid sequence from amino acid 5 to amino acid 14 of SEQ ID NO:80.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:79 and SEQ ID NO:81.

nucleotide 509 to nucleotide 619. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:77 from nucleotide 1 to nucleotide 580, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:77 from nucleotide 1 to nucleotide 580, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:77 from nucleotide 1 to nucleotide 580.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:78;
- 10 (b) the amino acid sequence of SEQ ID NO:78 from amino acid 1 to amino acid 24;
- (c) a fragment of the amino acid sequence of SEQ ID NO:78, the fragment comprising eight contiguous amino acids of SEQ ID NO:78; and
- (d) the amino acid sequence encoded by the cDNA insert of clone BD427_1
- 15 deposited with the ATCC under accession number 98261;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:78 or the amino acid sequence of SEQ ID NO:78 from amino acid 1 to amino acid 24. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:78 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:78, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:78 having biological activity, the fragment comprising the amino acid sequence from amino acid 13 to amino acid 22 of SEQ ID NO:78.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:79;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:79 from nucleotide 300 to nucleotide 360;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BL229_22 deposited with the ATCC under accession number 98261;
- 30 (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BL229_22 deposited with the ATCC under accession number 98261;

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

5 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:77, but excluding the poly(A) tail at the 3' end of SEQ ID NO:77; and

10 (ab) the nucleotide sequence of the cDNA insert of clone BD427_1 deposited with the ATCC under accession number 98261;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

15 (b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

20 (ba) SEQ ID NO:77, but excluding the poly(A) tail at the 3' end of SEQ ID NO:77; and

(bb) the nucleotide sequence of the cDNA insert of clone BD427_1 deposited with the ATCC under accession number 98261;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

25 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:77, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:77 to a nucleotide sequence
30 corresponding to the 3' end of SEQ ID NO:77, but excluding the poly(A) tail at the 3' end of SEQ ID NO:77. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:77 from nucleotide 509 to nucleotide 619, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:77 from nucleotide 509 to nucleotide 619, to a
35 nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:77 from

- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BD427_1 deposited with the ATCC under accession number 98261;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:78;
- 5 (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:78 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:78;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- 10 (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of
15 the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:77.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:77 from nucleotide 509 to nucleotide 619; the nucleotide sequence of SEQ ID NO:77 from nucleotide 1 to nucleotide 580; the nucleotide sequence of the full-length protein coding sequence
20 of clone BD427_1 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone BD427_1 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BD427_1 deposited with the ATCC under accession number 98261. In yet other preferred embodiments, the present invention
25 provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:78 from amino acid 1 to amino acid 24. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:78 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:78, or a
30 polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:78 having biological activity, the fragment comprising the amino acid sequence from amino acid 13 to amino acid 22 of SEQ ID NO:78.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:77.

sequence corresponding to the 5' end of said sequence of SEQ ID NO:75 from nucleotide 1 to nucleotide 313, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:75 from nucleotide 1 to nucleotide 313.

In other embodiments, the present invention provides a composition comprising a protein,
5 wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:76;
- (b) the amino acid sequence of SEQ ID NO:76 from amino acid 1 to amino acid 46;
- (c) a fragment of the amino acid sequence of SEQ ID NO:76, the fragment
10 comprising eight contiguous amino acids of SEQ ID NO:76; and
- (d) the amino acid sequence encoded by the cDNA insert of clone BD339_1 deposited with the ATCC under accession number 98261;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:76 or the amino acid sequence of SEQ ID
15 NO:76 from amino acid 1 to amino acid 46. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:76 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:76, or a protein comprising a
20 fragment of the amino acid sequence of SEQ ID NO:76 having biological activity, the fragment comprising the amino acid sequence from amino acid 39 to amino acid 48 of SEQ ID NO:76.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:77;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:77
25 from nucleotide 509 to nucleotide 619;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:77 from nucleotide 1 to nucleotide 580;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BD427_1 deposited with the ATCC under accession
30 number 98261;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BD427_1 deposited with the ATCC under accession number 98261;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BD427_1 deposited with the ATCC under accession number
35 98261;

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (aa) SEQ ID NO:75, but excluding the poly(A) tail at the 3' end of SEQ ID NO:75; and

(ab) the nucleotide sequence of the cDNA insert of clone BD339_1 deposited with the ATCC under accession number 98261;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

10 (iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

15 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:75, but excluding the poly(A) tail at the 3' end of SEQ ID NO:75; and

(bb) the nucleotide sequence of the cDNA insert of clone BD339_1 deposited with the ATCC under accession number 98261;

20 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

25 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:75, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:75 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:75, but excluding the poly(A) tail at the 3' end of SEQ ID NO:75. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:75 from nucleotide
30 174 to nucleotide 440, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:75 from nucleotide 174 to nucleotide 440, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:75 from nucleotide 174 to nucleotide 440. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID
35 NO:75 from nucleotide 1 to nucleotide 313, and extending contiguously from a nucleotide

- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:76 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:76;
- 5 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- 10 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:75.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:75 from nucleotide 174 to nucleotide 440; the nucleotide sequence of SEQ ID NO:75 from
15 nucleotide 1 to nucleotide 313; the nucleotide sequence of the full-length protein coding sequence of clone BD339_1 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone BD339_1 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BD339_1 deposited with the
20 ATCC under accession number 98261. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:76 from amino acid 1 to amino acid 46. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:76 having biological activity, the fragment preferably comprising eight
25 (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:76, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:76 having biological activity, the fragment comprising the amino acid sequence from amino acid 39 to amino acid 48 of SEQ ID NO:76.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
30 NO:75.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:

928, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:72 from nucleotide 815 to nucleotide 928.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- 5 (a) the amino acid sequence of SEQ ID NO:73;
 - (b) a fragment of the amino acid sequence of SEQ ID NO:73, the fragment comprising eight contiguous amino acids of SEQ ID NO:73; and
 - (c) the amino acid sequence encoded by the cDNA insert of clone BD176_3 deposited with the ATCC under accession number 98261;
- 10 the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:73. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:73 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:73, or a protein comprising
- 15 a fragment of the amino acid sequence of SEQ ID NO:73 having biological activity, the fragment comprising the amino acid sequence from amino acid 21 to amino acid 30 of SEQ ID NO:73.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:75;
- 20 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:75 from nucleotide 174 to nucleotide 440;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:75 from nucleotide 1 to nucleotide 313;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length
- 25 protein coding sequence of clone BD339_1 deposited with the ATCC under accession number 98261;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BD339_1 deposited with the ATCC under accession number 98261;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein
- 30 coding sequence of clone BD339_1 deposited with the ATCC under accession number 98261;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BD339_1 deposited with the ATCC under accession number 98261;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence
- 35 of SEQ ID NO:76;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

5 (b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:72;

10 (bb) SEQ ID NO:74, but excluding the poly(A) tail at the 3' end of SEQ ID NO:74; and

(bc) the nucleotide sequence of the cDNA insert of clone BD176_3 deposited with the ATCC under accession number 98261;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

15 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:72 and SEQ ID NO:74, and
20 extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:72 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:74, but excluding the poly(A) tail at the 3' end of SEQ ID NO:74. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:72, and extending contiguously from a nucleotide sequence corresponding to the 5' end of
25 SEQ ID NO:72 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:72. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:72 from nucleotide 773 to nucleotide 928, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:72 from nucleotide 773 to nucleotide 928, to a nucleotide
30 sequence corresponding to the 3' end of said sequence of SEQ ID NO:72 from nucleotide 773 to nucleotide 928. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:72 from nucleotide 815 to nucleotide 928, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:72 from nucleotide 815 to nucleotide

(k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

5 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:72.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:72 from nucleotide 773 to nucleotide 928; the nucleotide sequence of SEQ ID NO:72 from nucleotide
10 815 to nucleotide 928; the nucleotide sequence of the full-length protein coding sequence of clone BD176_3 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone BD176_3 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BD176_3 deposited with the ATCC under
15 accession number 98261. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:73 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:73, or a polynucleotide
20 encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:73 having biological activity, the fragment comprising the amino acid sequence from amino acid 21 to amino acid 30 of SEQ ID NO:73.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:72 and SEQ ID NO:74.

Further embodiments of the invention provide isolated polynucleotides produced
25 according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

30 (aa) SEQ ID NO:72;
(ab) SEQ ID NO:74, but excluding the poly(A) tail at the 3' end of SEQ ID NO:74; and
(ac) the nucleotide sequence of the cDNA insert of clone BD176_3 deposited with the ATCC under accession number 98261;

- (d) the amino acid sequence encoded by the cDNA insert of clone AX8_1 deposited with the ATCC under accession number 98261;
the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:71 or the amino acid sequence of SEQ ID NO:71 from amino acid 1 to amino acid 44. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:71 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:71, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:71 having biological activity, the fragment comprising the amino acid sequence from amino acid 131 to amino acid 140 of SEQ ID NO:71.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:72;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:72 from nucleotide 773 to nucleotide 928;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:72 from nucleotide 815 to nucleotide 928;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BD176_3 deposited with the ATCC under accession number 98261;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BD176_3 deposited with the ATCC under accession number 98261;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BD176_3 deposited with the ATCC under accession number 98261;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BD176_3 deposited with the ATCC under accession number 98261;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:73;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:73 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:73;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;

- (ba) SEQ ID NO:70, but excluding the poly(A) tail at the 3' end of SEQ ID NO:70; and
- (bb) the nucleotide sequence of the cDNA insert of clone AX8_1 deposited with the ATCC under accession number 98261;
- 5 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide
10 sequence corresponding to the cDNA sequence of SEQ ID NO:70, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:70 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:70, but excluding the poly(A) tail at the 3' end of SEQ ID NO:70. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:70 from nucleotide
15 242 to nucleotide 1060, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:70 from nucleotide 242 to nucleotide 1060, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:70 from nucleotide 242 to nucleotide 1060. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID
20 NO:70 from nucleotide 596 to nucleotide 1060, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:70 from nucleotide 596 to nucleotide 1060, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:70 from nucleotide 596 to nucleotide 1060. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA
25 sequence of SEQ ID NO:70 from nucleotide 10 to nucleotide 373, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:70 from nucleotide 10 to nucleotide 373, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:70 from nucleotide 10 to nucleotide 373.

In other embodiments, the present invention provides a composition comprising a protein,
30 wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:71;

(b) the amino acid sequence of SEQ ID NO:71 from amino acid 1 to amino acid 44;

(c) a fragment of the amino acid sequence of SEQ ID NO:71, the fragment
35 comprising eight contiguous amino acids of SEQ ID NO:71; and

nucleotide 596 to nucleotide 1060; the nucleotide sequence of SEQ ID NO:70 from nucleotide 10 to nucleotide 373; the nucleotide sequence of the full-length protein coding sequence of clone AX8_1 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone AX8_1 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AX8_1 deposited with the ATCC under accession number 98261. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:71 from amino acid 1 to amino acid 44. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:71 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:71, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:71 having biological activity, the fragment comprising the amino acid sequence from amino acid 131 to amino acid 140 of SEQ ID NO:71.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:70.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:70, but excluding the poly(A) tail at the 3' end of SEQ ID NO:70; and
 - (ab) the nucleotide sequence of the cDNA insert of clone AX8_1 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:70;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:70
5 from nucleotide 242 to nucleotide 1060;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:70
from nucleotide 596 to nucleotide 1060;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:70
from nucleotide 10 to nucleotide 373;
- 10 (e) a polynucleotide comprising the nucleotide sequence of the full-length
protein coding sequence of clone AX8_1 deposited with the ATCC under accession
number 98261;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA
insert of clone AX8_1 deposited with the ATCC under accession number 98261;
- 15 (g) a polynucleotide comprising the nucleotide sequence of a mature protein
coding sequence of clone AX8_1 deposited with the ATCC under accession number
98261;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert
of clone AX8_1 deposited with the ATCC under accession number 98261;
- 20 (i) a polynucleotide encoding a protein comprising the amino acid sequence
of SEQ ID NO:71;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino
acid sequence of SEQ ID NO:71 having biological activity, the fragment comprising eight
contiguous amino acids of SEQ ID NO:71;
- 25 (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h)
above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i)
or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of
30 the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of
the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the
length of SEQ ID NO:70.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:70
35 from nucleotide 242 to nucleotide 1060; the nucleotide sequence of SEQ ID NO:70 from

- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:68, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:68 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:68, but excluding the poly(A) tail at the 3' end of SEQ ID NO:68. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:68 from nucleotide 76 to nucleotide 1050, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:68 from nucleotide 76 to nucleotide 1050, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:68 from nucleotide 76 to nucleotide 1050. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:68 from nucleotide 331 to nucleotide 567, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:68 from nucleotide 331 to nucleotide 567, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:68 from nucleotide 331 to nucleotide 567.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:69;
- (b) the amino acid sequence of SEQ ID NO:69 from amino acid 87 to amino acid 164;
- (c) a fragment of the amino acid sequence of SEQ ID NO:69, the fragment comprising eight contiguous amino acids of SEQ ID NO:69; and
- (d) the amino acid sequence encoded by the cDNA insert of clone AS164_1 deposited with the ATCC under accession number 98261;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:69 or the amino acid sequence of SEQ ID NO:69 from amino acid 87 to amino acid 164. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:69 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:69, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:69 having biological activity, the fragment comprising the amino acid sequence from amino acid 157 to amino acid 166 of SEQ ID NO:69.

deposited with the ATCC under accession number 98261. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:69 from amino acid 87 to amino acid 164. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a
5 fragment of the amino acid sequence of SEQ ID NO:69 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:69, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:69 having biological activity, the fragment comprising the amino acid sequence from amino acid 157 to amino acid 166 of SEQ ID NO:69.

10 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:68.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - 15 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:68, but excluding the poly(A) tail at the 3' end of SEQ ID NO:68; and
 - 20 (ab) the nucleotide sequence of the cDNA insert of clone AS164_1 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
 - 25 and
 - (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 30 (ba) SEQ ID NO:68, but excluding the poly(A) tail at the 3' end of SEQ ID NO:68; and
 - (bb) the nucleotide sequence of the cDNA insert of clone AS164_1 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions
 - 35 at least as stringent as 4X SSC at 50 degrees C;

- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:68 from nucleotide 76 to nucleotide 1050;
 - (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:68 from nucleotide 331 to nucleotide 567;
 - 5 (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AS164_1 deposited with the ATCC under accession number 98261;
 - (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AS164_1 deposited with the ATCC under accession number 98261;
 - 10 (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AS164_1 deposited with the ATCC under accession number 98261;
 - (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AS164_1 deposited with the ATCC under accession number 98261;
 - 15 (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:69;
 - (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:69 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:69;
 - 20 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
 - (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
 - (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
 - 25 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:68.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:68 from nucleotide 76 to nucleotide 1050; the nucleotide sequence of SEQ ID NO:68 from nucleotide 331 to nucleotide 567; the nucleotide sequence of the full-length protein coding sequence of clone AS164_1 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone AS164_1 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AS164_1

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:65 and SEQ ID NO:66, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:65 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:66, but excluding the poly(A) tail at the 3' end of SEQ ID NO:66. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:66, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:66 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:66, but excluding the poly(A) tail at the 3' end of SEQ ID NO:66. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:66 from nucleotide 289 to nucleotide 780, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:66 from nucleotide 289 to nucleotide 780, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:66 from nucleotide 289 to nucleotide 780.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:67;
- (b) the amino acid sequence of SEQ ID NO:67 from amino acid 1 to amino acid 160;
- (c) a fragment of the amino acid sequence of SEQ ID NO:67, the fragment comprising eight contiguous amino acids of SEQ ID NO:67; and
- (d) the amino acid sequence encoded by the cDNA insert of clone AR440_1 deposited with the ATCC under accession number 98261;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:67 or the amino acid sequence of SEQ ID NO:67 from amino acid 1 to amino acid 160. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:67 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:67, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:67 having biological activity, the fragment comprising the amino acid sequence from amino acid 77 to amino acid 86 of SEQ ID NO:67.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:68;

preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:67, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:67 having biological activity, the fragment comprising the amino acid sequence from amino acid 77 to amino acid 86 of SEQ ID NO:67.

5 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:66 and SEQ ID NO:65.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - 10 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:65;
 - (ab) SEQ ID NO:66, but excluding the poly(A) tail at the 3'
 - 15 end of SEQ ID NO:66; and
 - (ac) the nucleotide sequence of the cDNA insert of clone AR440_1 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 20 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
 - 25 consisting of:
 - (ba) SEQ ID NO:65;
 - (bb) SEQ ID NO:66, but excluding the poly(A) tail at the 3'
 - end of SEQ ID NO:66; and
 - (bc) the nucleotide sequence of the cDNA insert of clone
 - 30 AR440_1 deposited with the ATCC under accession number 98261;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AR440_1 deposited with the ATCC under accession number 98261;
- 5 (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AR440_1 deposited with the ATCC under accession number 98261;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AR440_1 deposited with the ATCC under accession number 98261;
- 10 (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AR440_1 deposited with the ATCC under accession number 98261;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:67;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:67 having biological activity, the fragment comprising eight
15 contiguous amino acids of SEQ ID NO:67;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- 20 (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:66.
- 25 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:66 from nucleotide 289 to nucleotide 780; the nucleotide sequence of the full-length protein coding sequence of clone AR440_1 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone AR440_1 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide
30 encodes the full-length or a mature protein encoded by the cDNA insert of clone AR440_1 deposited with the ATCC under accession number 98261. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:67 from amino acid 1 to amino acid 160. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a
35 fragment of the amino acid sequence of SEQ ID NO:67 having biological activity, the fragment

above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:62, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:62 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:62. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:62 from nucleotide 68 to nucleotide 430, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:62 from nucleotide 68 to nucleotide 430, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:62 from nucleotide 68 to nucleotide 430. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:62 from nucleotide 128 to nucleotide 430, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:62 from nucleotide 128 to nucleotide 430, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:62 from nucleotide 128 to nucleotide 430.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:63;
- (b) a fragment of the amino acid sequence of SEQ ID NO:63, the fragment comprising eight contiguous amino acids of SEQ ID NO:63; and
- (c) the amino acid sequence encoded by the cDNA insert of clone AJ20_2 deposited with the ATCC under accession number 98261;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:63. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:63 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:63, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:63 having biological activity, the fragment comprising the amino acid sequence from amino acid 55 to amino acid 64 of SEQ ID NO:63.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:66;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:66 from nucleotide 289 to nucleotide 780;

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:62 and SEQ ID NO:64.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 5 (a) a process comprising the steps of:
- (i) preparing one or more polynucleotide probes that hybridize in 6X
SSC at 65 degrees C to a nucleotide sequence selected from the group consisting
of:
- (aa) SEQ ID NO:62;
- 10 (ab) SEQ ID NO:64, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:64; and
- (ac) the nucleotide sequence of the cDNA insert of clone
AJ20_2 deposited with the ATCC under accession number 98261;
- (ii) hybridizing said probe(s) to human genomic DNA in conditions
15 at least as stringent as 4X SSC at 50 degrees C; and
- (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in
20 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
consisting of:
- (ba) SEQ ID NO:62;
- (bb) SEQ ID NO:64, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:64; and
- 25 (bc) the nucleotide sequence of the cDNA insert of clone
AJ20_2 deposited with the ATCC under accession number 98261;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions
at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- 30 (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:62 and SEQ ID NO:64, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:62 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:64, but excluding the poly(A)
35 tail at the 3' end of SEQ ID NO:64. Also preferably the polynucleotide isolated according to the

- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AJ20_2 deposited with the ATCC under accession number 98261;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AJ20_2 deposited with the ATCC under accession number 98261;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AJ20_2 deposited with the ATCC under accession number 98261;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:63;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:63 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:63;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:62.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:62 from nucleotide 68 to nucleotide 430; the nucleotide sequence of SEQ ID NO:62 from nucleotide 128 to nucleotide 430; the nucleotide sequence of the full-length protein coding sequence of clone AJ20_2 deposited with the ATCC under accession number 98261; or the nucleotide sequence of a mature protein coding sequence of clone AJ20_2 deposited with the ATCC under accession number 98261. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AJ20_2 deposited with the ATCC under accession number 98261. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:63 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:63, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:63 having biological activity, the fragment comprising the amino acid sequence from amino acid 55 to amino acid 64 of SEQ ID NO:63.

nucleotide 87 to nucleotide 1871. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:60 from nucleotide 628 to nucleotide 1882, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:60 from nucleotide 628 to nucleotide 1882, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:60 from nucleotide 628 to nucleotide 1882.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:61;
- 10 (b) the amino acid sequence of SEQ ID NO:61 from amino acid 182 to amino acid 248;
- (c) a fragment of the amino acid sequence of SEQ ID NO:61, the fragment comprising eight contiguous amino acids of SEQ ID NO:61; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CO390_1
- 15 deposited with the ATCC under accession number 98232;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:61 or the amino acid sequence of SEQ ID NO:61 from amino acid 182 to amino acid 248. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:61 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:61, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:61 having biological activity, the fragment comprising the amino acid sequence from amino acid 292 to amino acid 301 of SEQ ID NO:61.

25 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:62;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:62 from nucleotide 68 to nucleotide 430;
- 30 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:62 from nucleotide 128 to nucleotide 430;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AJ20_2 deposited with the ATCC under accession number 98261;

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

5 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:60, but excluding the poly(A) tail at the 3' end of SEQ ID NO:60; and

10 (ab) the nucleotide sequence of the cDNA insert of clone CO390_1 deposited with the ATCC under accession number 98232;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

15 (b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

20 (ba) SEQ ID NO:60, but excluding the poly(A) tail at the 3' end of SEQ ID NO:60; and

(bb) the nucleotide sequence of the cDNA insert of clone CO390_1 deposited with the ATCC under accession number 98232;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

25 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:60, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:60 to a nucleotide sequence
30 corresponding to the 3' end of SEQ ID NO:60, but excluding the poly(A) tail at the 3' end of SEQ ID NO:60. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:60 from nucleotide 87 to nucleotide 1871, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:60 from nucleotide 87 to nucleotide 1871, to a
35 nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:60 from

- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CO390_1 deposited with the ATCC under accession number 98232;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:61;
- 5 (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:61 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:61;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- 10 (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:60.
- 15

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:60 from nucleotide 87 to nucleotide 1871; the nucleotide sequence of SEQ ID NO:60 from nucleotide 628 to nucleotide 1882; the nucleotide sequence of the full-length protein coding sequence of clone CO390_1 deposited with the ATCC under accession number 98232; or the nucleotide sequence of a mature protein coding sequence of clone CO390_1 deposited with the ATCC under accession number 98232. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CO390_1 deposited with the ATCC under accession number 98232. In yet other preferred embodiments,

20 the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:61 from amino acid 182 to amino acid 248. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:61 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:61, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:61 having biological activity, the fragment comprising the amino acid sequence from amino acid 292 to amino acid 301 of SEQ ID NO:61.

25 30

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:60.

sequence corresponding to the 5' end of said sequence of SEQ ID NO:58 from nucleotide 868 to nucleotide 1887, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:58 from nucleotide 868 to nucleotide 1887.

In other embodiments, the present invention provides a composition comprising a protein,
5 wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:59;
- (b) the amino acid sequence of SEQ ID NO:59 from amino acid 1 to amino acid 109;
- (c) a fragment of the amino acid sequence of SEQ ID NO:59, the fragment
10 comprising eight contiguous amino acids of SEQ ID NO:59; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CN238_1 deposited with the ATCC under accession number 98232;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:59 or the amino acid sequence of SEQ ID
15 NO:59 from amino acid 1 to amino acid 109. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:59 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:59, or a protein comprising a
20 fragment of the amino acid sequence of SEQ ID NO:59 having biological activity, the fragment comprising the amino acid sequence from amino acid 65 to amino acid 74 of SEQ ID NO:59.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:60;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:60
25 from nucleotide 87 to nucleotide 1871;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:60 from nucleotide 628 to nucleotide 1882;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CO390_1 deposited with the ATCC under accession
30 number 98232;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CO390_1 deposited with the ATCC under accession number 98232;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CO390_1 deposited with the ATCC under accession number
35 98232;

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (aa) SEQ ID NO:58, but excluding the poly(A) tail at the 3' end of SEQ ID NO:58; and

(ab) the nucleotide sequence of the cDNA insert of clone CN238_1 deposited with the ATCC under accession number 98232;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

10 (iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

15 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:58, but excluding the poly(A) tail at the 3' end of SEQ ID NO:58; and

(bb) the nucleotide sequence of the cDNA insert of clone CN238_1 deposited with the ATCC under accession number 98232;

20 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

25 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:58, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:58 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:58, but excluding the poly(A) tail at the 3' end of SEQ ID NO:58. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:58 from nucleotide
30 288 to nucleotide 710, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:58 from nucleotide 288 to nucleotide 710, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:58 from nucleotide 288 to nucleotide 710. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID
35 NO:58 from nucleotide 868 to nucleotide 1887, and extending contiguously from a nucleotide

- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:59 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:59;
- 5 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- 10 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:58.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:58 from nucleotide 288 to nucleotide 710; the nucleotide sequence of SEQ ID NO:58 from
15 nucleotide 868 to nucleotide 1887; the nucleotide sequence of the full-length protein coding sequence of clone CN238_1 deposited with the ATCC under accession number 98232; or the nucleotide sequence of a mature protein coding sequence of clone CN238_1 deposited with the ATCC under accession number 98232. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CN238_1
20 deposited with the ATCC under accession number 98232. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:59 from amino acid 1 to amino acid 109. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:59 having biological activity, the fragment
25 preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:59, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:59 having biological activity, the fragment comprising the amino acid sequence from amino acid 65 to amino acid 74 of SEQ ID NO:59.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
30 NO:58.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:

624, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:55 from nucleotide 325 to nucleotide 624.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- 5 (a) the amino acid sequence of SEQ ID NO:56;
- (b) a fragment of the amino acid sequence of SEQ ID NO:56, the fragment comprising eight contiguous amino acids of SEQ ID NO:56; and
- (c) the amino acid sequence encoded by the cDNA insert of clone CI522_1 deposited with the ATCC under accession number 98232;
- 10 the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:56. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:56 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:56, or a protein comprising
- 15 a fragment of the amino acid sequence of SEQ ID NO:56 having biological activity, the fragment comprising the amino acid sequence from amino acid 54 to amino acid 63 of SEQ ID NO:56.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:58;
- 20 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:58 from nucleotide 288 to nucleotide 710;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:58 from nucleotide 868 to nucleotide 1887;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CN238_1 deposited with the ATCC under accession
- 25 number 98232;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CN238_1 deposited with the ATCC under accession number 98232;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein
- 30 coding sequence of clone CN238_1 deposited with the ATCC under accession number 98232;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CN238_1 deposited with the ATCC under accession number 98232;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence
- 35 of SEQ ID NO:59;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

5 (b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:55;

10 (bb) SEQ ID NO:57, but excluding the poly(A) tail at the 3' end of SEQ ID NO:57; and

(bc) the nucleotide sequence of the cDNA insert of clone CI522_1 deposited with the ATCC under accession number 98232;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

15 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:55 and SEQ ID NO:57, and
20 extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:55 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:57, but excluding the poly(A) tail at the 3' end of SEQ ID NO:57. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:55, and extending contiguously from a nucleotide sequence corresponding to the 5' end of
25 SEQ ID NO:55 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:55. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:55 from nucleotide 268 to nucleotide 624, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:55 from nucleotide 268 to nucleotide 624, to a nucleotide
30 sequence corresponding to the 3' end of said sequence of SEQ ID NO:55 from nucleotide 268 to nucleotide 624. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:55 from nucleotide 325 to nucleotide 624, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:55 from nucleotide 325 to nucleotide

(k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

5 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:55.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:55 from nucleotide 268 to nucleotide 624; the nucleotide sequence of SEQ ID NO:55 from nucleotide
10 325 to nucleotide 624; the nucleotide sequence of the full-length protein coding sequence of clone CI522_1 deposited with the ATCC under accession number 98232; or the nucleotide sequence of a mature protein coding sequence of clone CI522_1 deposited with the ATCC under accession number 98232. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CI522_1 deposited with the ATCC under
15 accession number 98232. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:56 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:56, or a polynucleotide
20 encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:56 having biological activity, the fragment comprising the amino acid sequence from amino acid 54 to amino acid 63 of SEQ ID NO:56.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:55 and SEQ ID NO:57.

Further embodiments of the invention provide isolated polynucleotides produced
25 according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

30 (aa) SEQ ID NO:55;

(ab) SEQ ID NO:57, but excluding the poly(A) tail at the 3' end of SEQ ID NO:57; and

(ac) the nucleotide sequence of the cDNA insert of clone CI522_1 deposited with the ATCC under accession number 98232;

(d) the amino acid sequence encoded by the cDNA insert of clone CI490_2 deposited with the ATCC under accession number 98232; the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:54 or the amino acid sequence of SEQ ID NO:54 from amino acid 133 to amino acid 270. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:54 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:54, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:54 having biological activity, the fragment comprising the amino acid sequence from amino acid 130 to amino acid 139 of SEQ ID NO:54.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:55;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:55 from nucleotide 268 to nucleotide 624;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:55 from nucleotide 325 to nucleotide 624;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CI522_1 deposited with the ATCC under accession number 98232;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CI522_1 deposited with the ATCC under accession number 98232;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CI522_1 deposited with the ATCC under accession number 98232;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CI522_1 deposited with the ATCC under accession number 98232;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:56;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:56 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:56;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;

(ba) SEQ ID NO:53, but excluding the poly(A) tail at the 3' end of SEQ ID NO:53; and

(bb) the nucleotide sequence of the cDNA insert of clone CI490_2 deposited with the ATCC under accession number 98232;

5 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide
10 sequence corresponding to the cDNA sequence of SEQ ID NO:53, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:53 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:53, but excluding the poly(A) tail at the 3' end of SEQ ID NO:53. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:53 from nucleotide
15 232 to nucleotide 1041, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:53 from nucleotide 232 to nucleotide 1041, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:53 from nucleotide 232 to nucleotide 1041. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID
20 NO:53 from nucleotide 460 to nucleotide 1041, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:53 from nucleotide 460 to nucleotide 1041, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:53 from nucleotide 460 to nucleotide 1041. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA
25 sequence of SEQ ID NO:53 from nucleotide 590 to nucleotide 1163, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:53 from nucleotide 590 to nucleotide 1163, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:53 from nucleotide 590 to nucleotide 1163.

In other embodiments, the present invention provides a composition comprising a protein,
30 wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:54;

(b) the amino acid sequence of SEQ ID NO:54 from amino acid 133 to amino acid 270;

(c) a fragment of the amino acid sequence of SEQ ID NO:54, the fragment
35 comprising eight contiguous amino acids of SEQ ID NO:54; and

nucleotide 460 to nucleotide 1041; the nucleotide sequence of SEQ ID NO:53 from nucleotide 590 to nucleotide 1163; the nucleotide sequence of the full-length protein coding sequence of clone CI490_2 deposited with the ATCC under accession number 98232; or the nucleotide sequence of a mature protein coding sequence of clone CI490_2 deposited with the ATCC under
5 accession number 98232. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CI490_2 deposited with the ATCC under accession number 98232. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:54 from amino acid 133 to amino acid 270. In further preferred embodiments, the present
10 invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:54 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:54, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:54 having biological activity, the fragment comprising the amino acid sequence from amino
15 acid 130 to amino acid 139 of SEQ ID NO:54.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:53.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 20 (a) a process comprising the steps of:
- (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:53, but excluding the poly(A) tail at the 3'
25 end of SEQ ID NO:53; and
 - (ab) the nucleotide sequence of the cDNA insert of clone CI490_2 deposited with the ATCC under accession number 98232;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 30 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
- (i) preparing one or more polynucleotide primers that hybridize in
35 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:53;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:53
5 from nucleotide 232 to nucleotide 1041;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:53
from nucleotide 460 to nucleotide 1041;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:53
from nucleotide 590 to nucleotide 1163;
- 10 (e) a polynucleotide comprising the nucleotide sequence of the full-length
protein coding sequence of clone CI490_2 deposited with the ATCC under accession
number 98232;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA
insert of clone CI490_2 deposited with the ATCC under accession number 98232;
- 15 (g) a polynucleotide comprising the nucleotide sequence of a mature protein
coding sequence of clone CI490_2 deposited with the ATCC under accession number
98232;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert
of clone CI490_2 deposited with the ATCC under accession number 98232;
- 20 (i) a polynucleotide encoding a protein comprising the amino acid sequence
of SEQ ID NO:54;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino
acid sequence of SEQ ID NO:54 having biological activity, the fragment comprising eight
contiguous amino acids of SEQ ID NO:54;
- 25 (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h)
above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i)
or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of
30 the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of
the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the
length of SEQ ID NO:53.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:53
35 from nucleotide 232 to nucleotide 1041; the nucleotide sequence of SEQ ID NO:53 from

- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).
- 5 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:50 and SEQ ID NO:52, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:50 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:52, but excluding the poly(A) tail at the 3' end of SEQ ID NO:52. Also preferably the polynucleotide isolated according to the
- 10 above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:50, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:50 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:50. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:50 from nucleotide 144 to
- 15 nucleotide 566, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:50 from nucleotide 144 to nucleotide 566, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:50 from nucleotide 144 to nucleotide 566.

- In other embodiments, the present invention provides a composition comprising a protein,
- 20 wherein said protein comprises an amino acid sequence selected from the group consisting of:
- (a) the amino acid sequence of SEQ ID NO:51;
 - (b) the amino acid sequence of SEQ ID NO:51 from amino acid 39 to amino acid 141;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:51, the fragment
 - 25 comprising eight contiguous amino acids of SEQ ID NO:51; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone BR595_4 deposited with the ATCC under accession number 98232;

- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:51 or the amino acid sequence of SEQ ID
- 30 NO:51 from amino acid 39 to amino acid 141. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:51 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:51, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:51 having biological activity, the fragment
- 35 comprising the amino acid sequence from amino acid 65 to amino acid 74 of SEQ ID NO:51.

deposited with the ATCC under accession number 98232. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:51 from amino acid 39 to amino acid 141. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a
5 fragment of the amino acid sequence of SEQ ID NO:51 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:51, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:51 having biological activity, the fragment comprising the amino acid sequence from amino acid 65 to amino acid 74 of SEQ ID NO:51.

10 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:50 and SEQ ID NO:52.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - 15 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:50;
 - (ab) SEQ ID NO:52, but excluding the poly(A) tail at the 3'
20 end of SEQ ID NO:52; and
 - (ac) the nucleotide sequence of the cDNA insert of clone BR595_4 deposited with the ATCC under accession number 98232;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 25 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in
6X SSC at 65 degrees C to a nucleotide sequence selected from the group
30 consisting of:
 - (ba) SEQ ID NO:50;
 - (bb) SEQ ID NO:52, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:52; and
 - (bc) the nucleotide sequence of the cDNA insert of clone
35 BR595_4 deposited with the ATCC under accession number 98232;

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:50;
 - (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:50
5 from nucleotide 144 to nucleotide 566;
 - (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BR595_4 deposited with the ATCC under accession number 98232;
 - (d) a polynucleotide encoding the full-length protein encoded by the cDNA
10 insert of clone BR595_4 deposited with the ATCC under accession number 98232;
 - (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BR595_4 deposited with the ATCC under accession number 98232;
 - (f) a polynucleotide encoding a mature protein encoded by the cDNA insert
15 of clone BR595_4 deposited with the ATCC under accession number 98232;
 - (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:51;
 - (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:51 having biological activity, the fragment comprising eight
20 contiguous amino acids of SEQ ID NO:51;
 - (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
 - (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
 - (k) a polynucleotide that hybridizes under stringent conditions to any one of
25 the polynucleotides specified in (a)-(h); and
 - (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:50.
- 30 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:50 from nucleotide 144 to nucleotide 566; the nucleotide sequence of the full-length protein coding sequence of clone BR595_4 deposited with the ATCC under accession number 98232; or the nucleotide sequence of a mature protein coding sequence of clone BR595_4 deposited with the ATCC under accession number 98232. In other preferred embodiments, the polynucleotide
35 encodes the full-length or a mature protein encoded by the cDNA insert of clone BR595_4

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- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).
- 5 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:47 and SEQ ID NO:49, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:47 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:49, but excluding the poly(A) tail at the 3' end of SEQ ID NO:49. Also preferably the polynucleotide isolated according to the
- 10 above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:47, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:47 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:47. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:47 from nucleotide 45 to
- 15 nucleotide 428, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:47 from nucleotide 45 to nucleotide 428, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:47 from nucleotide 45 to nucleotide 428.

- In other embodiments, the present invention provides a composition comprising a protein,
- 20 wherein said protein comprises an amino acid sequence selected from the group consisting of:
- (a) the amino acid sequence of SEQ ID NO:48;
 - (b) the amino acid sequence of SEQ ID NO:48 from amino acid 52 to amino acid 128;
 - (c) a fragment of the amino acid sequence of SEQ ID NO:48, the fragment
 - 25 comprising eight contiguous amino acids of SEQ ID NO:48; and
 - (d) the amino acid sequence encoded by the cDNA insert of clone BO538_2 deposited with the ATCC under accession number 98232;

- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:48 or the amino acid sequence of SEQ ID
- 30 NO:48 from amino acid 52 to amino acid 128. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:48 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:48, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:48 having biological activity, the fragment
- 35 comprising the amino acid sequence from amino acid 59 to amino acid 68 of SEQ ID NO:48.

deposited with the ATCC under accession number 98232. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:48 from amino acid 52 to amino acid 128. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a
5 fragment of the amino acid sequence of SEQ ID NO:48 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:48, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:48 having biological activity, the fragment comprising the amino acid sequence from amino acid 59 to amino acid 68 of SEQ ID NO:48.

10 Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:47 and SEQ ID NO:49.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

15 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:47;

20 (ab) SEQ ID NO:49, but excluding the poly(A) tail at the 3' end of SEQ ID NO:49; and

(ac) the nucleotide sequence of the cDNA insert of clone BO538_2 deposited with the ATCC under accession number 98232;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

25 (iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

30 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:47;

(bb) SEQ ID NO:49, but excluding the poly(A) tail at the 3' end of SEQ ID NO:49; and

35 (bc) the nucleotide sequence of the cDNA insert of clone BO538_2 deposited with the ATCC under accession number 98232;

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:47;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:47
5 from nucleotide 45 to nucleotide 428;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BO538_2 deposited with the ATCC under accession number 98232;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA
10 insert of clone BO538_2 deposited with the ATCC under accession number 98232;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BO538_2 deposited with the ATCC under accession number 98232;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert
15 of clone BO538_2 deposited with the ATCC under accession number 98232;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:48;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:48 having biological activity, the fragment comprising eight
20 contiguous amino acids of SEQ ID NO:48;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of
25 the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:47.

30 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:47 from nucleotide 45 to nucleotide 428; the nucleotide sequence of the full-length protein coding sequence of clone BO538_2 deposited with the ATCC under accession number 98232; or the nucleotide sequence of a mature protein coding sequence of clone BO538_2 deposited with the ATCC under accession number 98232. In other preferred embodiments, the polynucleotide
35 encodes the full-length or a mature protein encoded by the cDNA insert of clone BO538_2

(bd) the nucleotide sequence of the cDNA insert of clone BO432_4 deposited with the ATCC under accession number 98232;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

5 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:43, SEQ ID NO:44, and SEQ ID NO:46, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:43 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:46, but excluding the poly(A) tail at the 3' end of SEQ ID NO:46. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:44, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:44 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:44. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:44 from nucleotide 566 to nucleotide 631, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:44 from nucleotide 566 to nucleotide 631, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:44 from nucleotide 566 to nucleotide 631.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:45;

25 (b) a fragment of the amino acid sequence of SEQ ID NO:45, the fragment comprising eight contiguous amino acids of SEQ ID NO:45; and

(c) the amino acid sequence encoded by the cDNA insert of clone BO432_4 deposited with the ATCC under accession number 98232;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:45. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:45 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:45, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:45 having biological activity, the fragment comprising the amino acid sequence from amino acid 6 to amino acid 15 of SEQ ID NO:45.

ATCC under accession number 98232. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BO432_4 deposited with the ATCC under accession number 98232. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:45 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:45, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:45 having biological activity, the fragment comprising the amino acid sequence from amino acid 6 to amino acid 15 of SEQ ID NO:45.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:44, SEQ ID NO:43, and SEQ ID NO:46.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:43;

(ab) SEQ ID NO:44;

(ac) SEQ ID NO:46, but excluding the poly(A) tail at the 3' end of SEQ ID NO:46; and

(ad) the nucleotide sequence of the cDNA insert of clone BO432_4 deposited with the ATCC under accession number 98232;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:43;

(bb) SEQ ID NO:44;

(bc) SEQ ID NO:46, but excluding the poly(A) tail at the 3' end of SEQ ID NO:46; and

fragment of the amino acid sequence of SEQ ID NO:42 having biological activity, the fragment comprising the amino acid sequence from amino acid 316 to amino acid 325 of SEQ ID NO:42.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- 5 (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:44;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:44 from nucleotide 566 to nucleotide 631;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BO432_4 deposited with the ATCC under accession
10 number 98232;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BO432_4 deposited with the ATCC under accession number 98232;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BO432_4 deposited with the ATCC under accession number
15 98232;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BO432_4 deposited with the ATCC under accession number 98232;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:45;
- 20 (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:45 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:45;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- 25 (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- 30 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:44.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:44 from nucleotide 566 to nucleotide 631; the nucleotide sequence of the full-length protein coding sequence of clone BO432_4 deposited with the ATCC under accession number 98232; or the
35 nucleotide sequence of a mature protein coding sequence of clone BO432_4 deposited with the

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:41, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:41 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:41, but excluding the poly(A) tail at the 3' end of SEQ ID NO:41. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:41 from nucleotide 102 to nucleotide 207, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:41 from nucleotide 102 to nucleotide 207, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:41 from nucleotide 102 to nucleotide 207. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:41 from nucleotide 1902 to nucleotide 207, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:41 from nucleotide 1902 to nucleotide 207, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:41 from nucleotide 1902 to nucleotide 207. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:41 from nucleotide 1 to nucleotide 431, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:41 from nucleotide 1 to nucleotide 431, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:41 from nucleotide 1 to nucleotide 431.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:42;
- (b) the amino acid sequence of SEQ ID NO:42 from amino acid 1 to amino acid 110;
- (c) a fragment of the amino acid sequence of SEQ ID NO:42, the fragment comprising eight contiguous amino acids of SEQ ID NO:42; and
- (d) the amino acid sequence encoded by the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:42 or the amino acid sequence of SEQ ID NO:42 from amino acid 1 to amino acid 110. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:42 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:42, or a protein comprising a

a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:42 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:42, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:42 having biological activity, the fragment comprising the amino acid sequence from amino acid 316 to amino acid 325 of SEQ ID NO:42.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:41.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (aa) SEQ ID NO:41, but excluding the poly(A) tail at the 3' end of SEQ ID NO:41; and

- (ab) the nucleotide sequence of the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232;

- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

- (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:

- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (ba) SEQ ID NO:41, but excluding the poly(A) tail at the 3' end of SEQ ID NO:41; and

- (bb) the nucleotide sequence of the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232;

- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

- (iii) amplifying human DNA sequences; and

- (iv) isolating the polynucleotide products of step (b)(iii).

- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BG160_1 deposited with the ATCC under accession number 98232;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BG160_1 deposited with the ATCC under accession number 98232;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:42;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:42 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:42;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:41.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:41 from nucleotide 102 to nucleotide 2027; the nucleotide sequence of SEQ ID NO:41 from nucleotide 1902 to nucleotide 2027; the nucleotide sequence of SEQ ID NO:41 from nucleotide 1 to nucleotide 431; the nucleotide sequence of the full-length protein coding sequence of clone BG160_1 deposited with the ATCC under accession number 98232; or the nucleotide sequence of a mature protein coding sequence of clone BG160_1 deposited with the ATCC under accession number 98232. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BG160_1 deposited with the ATCC under accession number 98232. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:42 from amino acid 1 to amino acid 110. In further preferred embodiments, the present invention provides

nucleotide 198 to nucleotide 2039. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:39 from nucleotide 490 to nucleotide 809, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:39 from nucleotide 490 to nucleotide 809, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:39 from nucleotide 490 to nucleotide 809.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:40;
- 10 (b) the amino acid sequence of SEQ ID NO:40 from amino acid 106 to amino acid 204;
- (c) a fragment of the amino acid sequence of SEQ ID NO:40, the fragment comprising eight contiguous amino acids of SEQ ID NO:40; and
- (d) the amino acid sequence encoded by the cDNA insert of clone AY304_14
- 15 deposited with the ATCC under accession number 98561;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:40 or the amino acid sequence of SEQ ID NO:40 from amino acid 106 to amino acid 204. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:40 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:40, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:40 having biological activity, the fragment comprising the amino acid sequence from amino acid 302 to amino acid 311 of SEQ ID NO:40.

25 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:41;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:41 from nucleotide 102 to nucleotide 2027;
- 30 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:41 from nucleotide 1902 to nucleotide 2027;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:41 from nucleotide 1 to nucleotide 431;

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:39, but excluding the poly(A) tail at the 3' end of SEQ ID NO:39; and
 - (ab) the nucleotide sequence of the cDNA insert of clone AY304_14 deposited with the ATCC under accession number 98561;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (ba) SEQ ID NO:39, but excluding the poly(A) tail at the 3' end of SEQ ID NO:39; and
 - (bb) the nucleotide sequence of the cDNA insert of clone AY304_14 deposited with the ATCC under accession number 98561;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:39, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:39 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:39, but excluding the poly(A) tail at the 3' end of SEQ ID NO:39. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:39 from nucleotide 198 to nucleotide 2039, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:39 from nucleotide 198 to nucleotide 2039, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:39 from

- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AY304_14 deposited with the ATCC under accession number 98561;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:40;
- 5 (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:40 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:40;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- 10 (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of
- 15 the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:39.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:39 from nucleotide 198 to nucleotide 2039; the nucleotide sequence of SEQ ID NO:39 from nucleotide 490 to nucleotide 809; the nucleotide sequence of the full-length protein coding
- 20 sequence of clone AY304_14 deposited with the ATCC under accession number 98561; or the nucleotide sequence of a mature protein coding sequence of clone AY304_14 deposited with the ATCC under accession number 98561. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AY304_14 deposited with the ATCC under accession number 98561. In yet other preferred embodiments,
- 25 the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:40 from amino acid 106 to amino acid 204. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:40 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino
- 30 acids of SEQ ID NO:40, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:40 having biological activity, the fragment comprising the amino acid sequence from amino acid 302 to amino acid 311 of SEQ ID NO:40.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:39.

376, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:36 from nucleotide 179 to nucleotide 376.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- 5 (a) the amino acid sequence of SEQ ID NO:37;
- (b) the amino acid sequence of SEQ ID NO:37 from amino acid 1 to amino acid 91;
- (c) a fragment of the amino acid sequence of SEQ ID NO:37, the fragment comprising eight contiguous amino acids of SEQ ID NO:37; and
- 10 (d) the amino acid sequence encoded by the cDNA insert of clone AS63_29 deposited with the ATCC under accession number 98232;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:37 or the amino acid sequence of SEQ ID NO:37 from amino acid 1 to amino acid 91. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:37 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:37, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:37 having biological activity, the fragment comprising the amino acid sequence from amino acid 48 to amino acid 57 of SEQ ID NO:37.

20 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:39;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:39 from nucleotide 198 to nucleotide 2039;
- 25 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:39 from nucleotide 490 to nucleotide 809;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AY304_14 deposited with the ATCC under accession number 98561;
- 30 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AY304_14 deposited with the ATCC under accession number 98561;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AY304_14 deposited with the ATCC under accession number 98561;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

5

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:36;

10

(bb) SEQ ID NO:38, but excluding the poly(A) tail at the 3' end of SEQ ID NO:38; and

(bc) the nucleotide sequence of the cDNA insert of clone AS63_29 deposited with the ATCC under accession number 98232;

15

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:36 and SEQ ID NO:38, and
20 extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:36 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:38, but excluding the poly(A) tail at the 3' end of SEQ ID NO:38. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:36, and extending contiguously from a nucleotide sequence corresponding to the 5' end of
25 SEQ ID NO:36 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:36. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:36 from nucleotide 59 to nucleotide 376, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:36 from nucleotide 59 to nucleotide 376, to a nucleotide
30 sequence corresponding to the 3' end of said sequence of SEQ ID NO:36 from nucleotide 59 to nucleotide 376. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:36 from nucleotide 179 to nucleotide 376, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:36 from nucleotide 179 to nucleotide

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:36.

5 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:36 from nucleotide 59 to nucleotide 376; the nucleotide sequence of SEQ ID NO:36 from nucleotide 179 to nucleotide 376; the nucleotide sequence of the full-length protein coding sequence of clone AS63_29 deposited with the ATCC under accession number 98232; or the nucleotide sequence
10 of a mature protein coding sequence of clone AS63_29 deposited with the ATCC under accession number 98232. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AS63_29 deposited with the ATCC under accession number 98232. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:37 from
15 amino acid 1 to amino acid 91. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:37 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:37, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:37 having
20 biological activity, the fragment comprising the amino acid sequence from amino acid 48 to amino acid 57 of SEQ ID NO:37.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:36 and SEQ ID NO:38.

Further embodiments of the invention provide isolated polynucleotides produced
25 according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

30 (aa) SEQ ID NO:36;
(ab) SEQ ID NO:38, but excluding the poly(A) tail at the 3' end of SEQ ID NO:38; and
(ac) the nucleotide sequence of the cDNA insert of clone AS63_29 deposited with the ATCC under accession number 98232;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:35 or the amino acid sequence of SEQ ID NO:35 from amino acid 51 to amino acid 221. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:35 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:35, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:35 having biological activity, the fragment comprising the amino acid sequence from amino acid 115 to amino acid 124 of SEQ ID NO:35.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:36;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:36 from nucleotide 59 to nucleotide 376;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:36 from nucleotide 179 to nucleotide 376;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AS63_29 deposited with the ATCC under accession number 98232;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AS63_29 deposited with the ATCC under accession number 98232;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AS63_29 deposited with the ATCC under accession number 98232;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AS63_29 deposited with the ATCC under accession number 98232;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:37;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:37 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:37;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;

- (bb) the nucleotide sequence of the cDNA insert of clone AR415_4 deposited with the ATCC under accession number 98232;
- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- 5 (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:34, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:34 to a nucleotide sequence

10 corresponding to the 3' end of SEQ ID NO:34, but excluding the poly(A) tail at the 3' end of SEQ ID NO:34. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:34 from nucleotide 437 to nucleotide 1159, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:34 from nucleotide 437 to nucleotide 1159, to a

15 nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:34 from nucleotide 437 to nucleotide 1159. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:34 from nucleotide 515 to nucleotide 1159, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:34 from nucleotide 515 to

20 nucleotide 1159, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:34 from nucleotide 515 to nucleotide 1159. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:34 from nucleotide 539 to nucleotide 1099, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:34 from

25 nucleotide 539 to nucleotide 1099, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:34 from nucleotide 539 to nucleotide 1099.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:35;
- 30 (b) the amino acid sequence of SEQ ID NO:35 from amino acid 51 to amino acid 221;
- (c) a fragment of the amino acid sequence of SEQ ID NO:35, the fragment comprising eight contiguous amino acids of SEQ ID NO:35; and
- (d) the amino acid sequence encoded by the cDNA insert of clone AR415_4
- 35 deposited with the ATCC under accession number 98232;

sequence of a mature protein coding sequence of clone AR415_4 deposited with the ATCC under accession number 98232. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AR415_4 deposited with the ATCC under accession number 98232. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:35 from amino acid 51 to amino acid 221. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:35 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:35, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:35 having biological activity, the fragment comprising the amino acid sequence from amino acid 115 to amino acid 124 of SEQ ID NO:35.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:34.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (aa) SEQ ID NO:34, but excluding the poly(A) tail at the 3' end of SEQ ID NO:34; and

- (ab) the nucleotide sequence of the cDNA insert of clone AR415_4 deposited with the ATCC under accession number 98232;

- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

- (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:

- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (ba) SEQ ID NO:34, but excluding the poly(A) tail at the 3' end of SEQ ID NO:34; and

- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:34 from nucleotide 437 to nucleotide 1159;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:34 from nucleotide 515 to nucleotide 1159;
- 5 (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:34 from nucleotide 539 to nucleotide 1099;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone AR415_4 deposited with the ATCC under accession number 98232;
- 10 (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone AR415_4 deposited with the ATCC under accession number 98232;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AR415_4 deposited with the ATCC under accession number 98232;
- 15 (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AR415_4 deposited with the ATCC under accession number 98232;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:35;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:35 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:35;
- 20 (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- 25 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:34.
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Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:34 from nucleotide 437 to nucleotide 1159; the nucleotide sequence of SEQ ID NO:34 from nucleotide 515 to nucleotide 1159; the nucleotide sequence of SEQ ID NO:34 from nucleotide 539 to nucleotide 1099; the nucleotide sequence of the full-length protein coding sequence of clone AR415_4 deposited with the ATCC under accession number 98232; or the nucleotide

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from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:32 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:32, but excluding the poly(A) tail at the 3' end of SEQ ID NO:32. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:32 from nucleotide 338 to nucleotide 1198, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:32 from nucleotide 338 to nucleotide 1198, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:32 from nucleotide 338 to nucleotide 1198. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:32 from nucleotide 467 to nucleotide 1058, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:32 from nucleotide 467 to nucleotide 1058, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:32 from nucleotide 467 to nucleotide 1058.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:33;
- (b) the amino acid sequence of SEQ ID NO:33 from amino acid 124 to amino acid 182;
- (c) a fragment of the amino acid sequence of SEQ ID NO:33, the fragment comprising eight contiguous amino acids of SEQ ID NO:33; and
- (d) the amino acid sequence encoded by the cDNA insert of clone DA136_11 deposited with the ATCC under accession number 98196;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:33 or the amino acid sequence of SEQ ID NO:33 from amino acid 124 to amino acid 182. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:33 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:33, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:33 having biological activity, the fragment comprising the amino acid sequence from amino acid 138 to amino acid 147 of SEQ ID NO:33.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:34;

fragment of the amino acid sequence of SEQ ID NO:33 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:33, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:33 having biological activity, the fragment comprising the amino acid sequence from amino acid 138 to amino acid 147 of SEQ ID NO:33.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:32.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 10 (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 15 (aa) SEQ ID NO:32, but excluding the poly(A) tail at the 3' end of SEQ ID NO:32; and
 - (ab) the nucleotide sequence of the cDNA insert of clone DA136_11 deposited with the ATCC under accession number 98196;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 20 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 25 (ba) SEQ ID NO:32, but excluding the poly(A) tail at the 3' end of SEQ ID NO:32; and
 - (bb) the nucleotide sequence of the cDNA insert of clone DA136_11 deposited with the ATCC under accession number 98196;
 - 30 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:32, and extending contiguously

- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone DA136_11 deposited with the ATCC under accession number 98196;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone DA136_11 deposited with the ATCC under accession number 98196;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone DA136_11 deposited with the ATCC under accession number 98196;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone DA136_11 deposited with the ATCC under accession number 98196;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:33;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:33 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:33;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:32.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:32 from nucleotide 338 to nucleotide 1198; the nucleotide sequence of SEQ ID NO:32 from nucleotide 467 to nucleotide 1058; the nucleotide sequence of the full-length protein coding sequence of clone DA136_11 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone DA136_11 deposited with the ATCC under accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone DA136_11 deposited with the ATCC under accession number 98196. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:33 from amino acid 124 to amino acid 182. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a

nucleotide 351, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:29 from nucleotide 28 to nucleotide 351, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:29 from nucleotide 28 to nucleotide 351. Also preferably the polynucleotide isolated according to the above process
5 comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:29 from nucleotide 328 to nucleotide 351, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:29 from nucleotide 328 to nucleotide 351, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:29 from nucleotide 328 to nucleotide 351.

10 In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:30;
- (b) the amino acid sequence of SEQ ID NO:30 from amino acid 56 to amino acid 108;
- 15 (c) a fragment of the amino acid sequence of SEQ ID NO:30, the fragment comprising eight contiguous amino acids of SEQ ID NO:30; and
- (d) the amino acid sequence encoded by the cDNA insert of clone CC194_4 deposited with the ATCC under accession number 98196;

the protein being substantially free from other mammalian proteins. Preferably such protein
20 comprises the amino acid sequence of SEQ ID NO:30 or the amino acid sequence of SEQ ID NO:30 from amino acid 56 to amino acid 108. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:30 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:30, or a protein comprising a
25 fragment of the amino acid sequence of SEQ ID NO:30 having biological activity, the fragment comprising the amino acid sequence from amino acid 49 to amino acid 58 of SEQ ID NO:30.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:32;
- 30 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:32 from nucleotide 338 to nucleotide 1198;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:32 from nucleotide 467 to nucleotide 1058;

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:29;

5 (ab) SEQ ID NO:31, but excluding the poly(A) tail at the 3' end of SEQ ID NO:31; and

(ac) the nucleotide sequence of the cDNA insert of clone CC194_4 deposited with the ATCC under accession number 98196;

10 (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

(b) a process comprising the steps of:

15 (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:29;

(bb) SEQ ID NO:31, but excluding the poly(A) tail at the 3' end of SEQ ID NO:31; and

20 (bc) the nucleotide sequence of the cDNA insert of clone CC194_4 deposited with the ATCC under accession number 98196;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

25 (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:29 and SEQ ID NO:31, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:29 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:31, but excluding the poly(A) tail at the 3' end of SEQ ID NO:31. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:29, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:29 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:29. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:29 from nucleotide 28 to

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- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:30 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:30;
- 5 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- 10 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:29.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:29 from nucleotide 28 to nucleotide 351; the nucleotide sequence of SEQ ID NO:29 from nucleotide 328 to nucleotide 351; the nucleotide sequence of the full-length protein coding sequence of clone CC194_4 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone CC194_4 deposited with the ATCC under accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone CC194_4 deposited with the ATCC under accession number 98196. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:30 from amino acid 56 to amino acid 108. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:30 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:30, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:30 having biological activity, the fragment comprising the amino acid sequence from amino acid 49 to amino acid 58 of SEQ ID NO:30.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:29 and SEQ ID NO:31.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:

(b) the amino acid sequence of SEQ ID NO:28 from amino acid 1 to amino acid 37;

(c) a fragment of the amino acid sequence of SEQ ID NO:28, the fragment comprising eight contiguous amino acids of SEQ ID NO:28; and

5 (d) the amino acid sequence encoded by the cDNA insert of clone BV141_2 deposited with the ATCC under accession number 98196;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:28 or the amino acid sequence of SEQ ID NO:28 from amino acid 1 to amino acid 37. In further preferred embodiments, the present
10 invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:28 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:28, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:28 having biological activity, the fragment comprising the amino acid sequence from amino acid 33 to amino acid 42 of SEQ ID NO:28.

15 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

(a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:29;

(b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:29 from nucleotide 28 to nucleotide 351;

20 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:29 from nucleotide 328 to nucleotide 351;

(d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone CC194_4 deposited with the ATCC under accession number 98196;

25 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone CC194_4 deposited with the ATCC under accession number 98196;

(f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone CC194_4 deposited with the ATCC under accession number 98196;

30 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone CC194_4 deposited with the ATCC under accession number 98196;

(h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:30;

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(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

5 (b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

10 (ba) SEQ ID NO:27, but excluding the poly(A) tail at the 3' end of SEQ ID NO:27; and

(bb) the nucleotide sequence of the cDNA insert of clone BV141_2 deposited with the ATCC under accession number 98196;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

15 (iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:27, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:27 to a nucleotide sequence
20 corresponding to the 3' end of SEQ ID NO:27, but excluding the poly(A) tail at the 3' end of SEQ ID NO:27. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:27 from nucleotide 101 to nucleotide 328, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:27 from nucleotide 101 to nucleotide 328, to a
25 nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:27 from nucleotide 101 to nucleotide 328. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:27 from nucleotide 1 to nucleotide 197, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:27 from nucleotide 1 to
30 nucleotide 197, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:27 from nucleotide 1 to nucleotide 197.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:28;

(k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

5 (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:27.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:27 from nucleotide 101 to nucleotide 328; the nucleotide sequence of SEQ ID NO:27 from
10 nucleotide 1 to nucleotide 197; the nucleotide sequence of the full-length protein coding sequence of clone BV141_2 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone BV141_2 deposited with the ATCC under accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BV141_2 deposited with the
15 ATCC under accession number 98196. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:28 from amino acid 1 to amino acid 37. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:28 having biological activity, the fragment preferably comprising eight
20 (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:28, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:28 having biological activity, the fragment comprising the amino acid sequence from amino acid 33 to amino acid 42 of SEQ ID NO:28.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
25 NO:27.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

30 (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:27, but excluding the poly(A) tail at the 3' end of SEQ ID NO:27; and

35 (ab) the nucleotide sequence of the cDNA insert of clone BV141_2 deposited with the ATCC under accession number 98196;

(d) the amino acid sequence encoded by the cDNA insert of clone BV140_3 deposited with the ATCC under accession number 98196; the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:25 or the amino acid sequence of SEQ ID NO:25 from amino acid 29 to amino acid 57. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:25 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:25, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:25 having biological activity, the fragment comprising the amino acid sequence from amino acid 51 to amino acid 60 of SEQ ID NO:25.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:27;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:27 from nucleotide 101 to nucleotide 328;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:27 from nucleotide 1 to nucleotide 197;
- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BV141_2 deposited with the ATCC under accession number 98196;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BV141_2 deposited with the ATCC under accession number 98196;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BV141_2 deposited with the ATCC under accession number 98196;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BV141_2 deposited with the ATCC under accession number 98196;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:28;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:28 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:28;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- 5 (ba) SEQ ID NO:23;
(bb) SEQ ID NO:24;
(bc) SEQ ID NO:26, but excluding the poly(A) tail at the 3' end of SEQ ID NO:26; and
(bd) the nucleotide sequence of the cDNA insert of clone BV140_3 deposited with the ATCC under accession number 98196;
- 10 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
- (iii) amplifying human DNA sequences; and
- (iv) isolating the polynucleotide products of step (b)(iii).

15 Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:23, SEQ ID NO:24, and SEQ ID NO:26, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:23 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:26, but excluding the poly(A) tail at the 3' end of SEQ ID NO:26. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the

20 cDNA sequence of SEQ ID NO:24, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:24 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:24. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:24 from nucleotide 57 to nucleotide 396, and extending contiguously from a nucleotide sequence

25 corresponding to the 5' end of said sequence of SEQ ID NO:24 from nucleotide 57 to nucleotide 396, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:24 from nucleotide 57 to nucleotide 396.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- 30 (a) the amino acid sequence of SEQ ID NO:25;
- (b) the amino acid sequence of SEQ ID NO:25 from amino acid 29 to amino acid 57;
- (c) a fragment of the amino acid sequence of SEQ ID NO:25, the fragment comprising eight contiguous amino acids of SEQ ID NO:25; and

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:24 from nucleotide 57 to nucleotide 396; the nucleotide sequence of the full-length protein coding sequence of clone BV140_3 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone BV140_3 deposited with the ATCC under accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BV140_3 deposited with the ATCC under accession number 98196. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:25 from amino acid 29 to amino acid 57. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:25 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:25, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:25 having biological activity, the fragment comprising the amino acid sequence from amino acid 51 to amino acid 60 of SEQ ID NO:25.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:24, SEQ ID NO:23, and SEQ ID NO:26.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:23;
 - (ab) SEQ ID NO:24;
 - (ac) SEQ ID NO:26, but excluding the poly(A) tail at the 3' end of SEQ ID NO:26; and
 - (ad) the nucleotide sequence of the cDNA insert of clone BV140_3 deposited with the ATCC under accession number 98196;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:

present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:21 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:21, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:21 having biological activity, the fragment comprising the amino acid sequence from amino acid 38 to amino acid 47 of SEQ ID NO:21.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:24;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:24 from nucleotide 57 to nucleotide 396;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BV140_3 deposited with the ATCC under accession number 98196;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BV140_3 deposited with the ATCC under accession number 98196;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BV140_3 deposited with the ATCC under accession number 98196;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BV140_3 deposited with the ATCC under accession number 98196;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:25;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:25 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:25;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:24.

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:20;

5 (bb) SEQ ID NO:22, but excluding the poly(A) tail at the 3' end of SEQ ID NO:22; and

(bc) the nucleotide sequence of the cDNA insert of clone BV51_1 deposited with the ATCC under accession number 98196;

10 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:20 and SEQ ID NO:22, and
15 extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:20 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:22, but excluding the poly(A) tail at the 3' end of SEQ ID NO:22. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:20, and extending contiguously from a nucleotide sequence corresponding to the 5' end of
20 SEQ ID NO:20 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:20. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:20 from nucleotide 68 to nucleotide 328, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:20 from nucleotide 68 to nucleotide 328, to a nucleotide
25 sequence corresponding to the 3' end of said sequence of SEQ ID NO:20 from nucleotide 68 to nucleotide 328.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:21;

30 (b) a fragment of the amino acid sequence of SEQ ID NO:21, the fragment comprising eight contiguous amino acids of SEQ ID NO:21; and

(c) the amino acid sequence encoded by the cDNA insert of clone BV51_1 deposited with the ATCC under accession number 98196;

the protein being substantially free from other mammalian proteins. Preferably such protein
35 comprises the amino acid sequence of SEQ ID NO:21. In further preferred embodiments, the

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:20.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:20
5 from nucleotide 68 to nucleotide 328; the nucleotide sequence of the full-length protein coding
sequence of clone BV51_1 deposited with the ATCC under accession number 98196; or the
nucleotide sequence of a mature protein coding sequence of clone BV51_1 deposited with the
ATCC under accession number 98196. In other preferred embodiments, the polynucleotide
encodes the full-length or a mature protein encoded by the cDNA insert of clone BV51_1
10 deposited with the ATCC under accession number 98196. In further preferred embodiments, the
present invention provides a polynucleotide encoding a protein comprising a fragment of the
amino acid sequence of SEQ ID NO:21 having biological activity, the fragment preferably
comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ
ID NO:21, or a polynucleotide encoding a protein comprising a fragment of the amino acid
15 sequence of SEQ ID NO:21 having biological activity, the fragment comprising the amino acid
sequence from amino acid 38 to amino acid 47 of SEQ ID NO:21.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
NO:20 and SEQ ID NO:22.

Further embodiments of the invention provide isolated polynucleotides produced
20 according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X
SSC at 65 degrees C to a nucleotide sequence selected from the group consisting
of:
 - 25 (aa) SEQ ID NO:20;
 - (ab) SEQ ID NO:22, but excluding the poly(A) tail at the 3'
end of SEQ ID NO:22; and
 - (ac) the nucleotide sequence of the cDNA insert of clone
BV51_1 deposited with the ATCC under accession number 98196;
 - 30 (ii) hybridizing said probe(s) to human genomic DNA in conditions
at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:19. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:19 having biological activity, the fragment preferably comprising eight (more preferably
5 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:19, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:19 having biological activity, the fragment comprising the amino acid sequence from amino acid 113 to amino acid 122 of SEQ ID NO:19.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- 10 (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:20;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:20 from nucleotide 68 to nucleotide 328;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BV51_1 deposited with the ATCC under accession
15 number 98196;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BV51_1 deposited with the ATCC under accession number 98196;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BV51_1 deposited with the ATCC under accession number
20 98196;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BV51_1 deposited with the ATCC under accession number 98196;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:21;
- 25 (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:21 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:21;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- 30 (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

5 (ba) SEQ ID NO:18, but excluding the poly(A) tail at the 3' end of SEQ ID NO:18; and

(bb) the nucleotide sequence of the cDNA insert of clone BO365_2 deposited with the ATCC under accession number 98196;

10 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:18, and extending contiguously
15 from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:18 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:18, but excluding the poly(A) tail at the 3' end of SEQ ID NO:18. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:18 from nucleotide 1237 to nucleotide 1944, and extending contiguously from a nucleotide sequence corresponding
20 to the 5' end of said sequence of SEQ ID NO:18 from nucleotide 1237 to nucleotide 1944, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:18 from nucleotide 1237 to nucleotide 1944. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:18 from nucleotide 737 to nucleotide 1072, and extending contiguously from a nucleotide
25 sequence corresponding to the 5' end of said sequence of SEQ ID NO:18 from nucleotide 737 to nucleotide 1072, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:18 from nucleotide 737 to nucleotide 1072.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

30 (a) the amino acid sequence of SEQ ID NO:19;

(b) a fragment of the amino acid sequence of SEQ ID NO:19, the fragment comprising eight contiguous amino acids of SEQ ID NO:19; and

(c) the amino acid sequence encoded by the cDNA insert of clone BO365_2 deposited with the ATCC under accession number 98196;

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and

(m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:18.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:18 from nucleotide 1237 to nucleotide 1944; the nucleotide sequence of SEQ ID NO:18 from nucleotide 737 to nucleotide 1072; the nucleotide sequence of the full-length protein coding sequence of clone BO365_2 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone BO365_2 deposited with the ATCC under accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BO365_2 deposited with the ATCC under accession number 98196. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:19 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:19, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:19 having biological activity, the fragment comprising the amino acid sequence from amino acid 113 to amino acid 122 of SEQ ID NO:19.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:18.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:18, but excluding the poly(A) tail at the 3' end of SEQ ID NO:18; and

(ab) the nucleotide sequence of the cDNA insert of clone BO365_2 deposited with the ATCC under accession number 98196;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (c) the amino acid sequence encoded by the cDNA insert of clone BO71_1 deposited with the ATCC under accession number 98196;
the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:16. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:16 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:16, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:16 having biological activity, the fragment comprising the amino acid sequence from amino acid 8 to amino acid 17 of SEQ ID NO:16.
- 10 In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:
- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:18;
 - (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:18 from nucleotide 1237 to nucleotide 1944;
 - 15 (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:18 from nucleotide 737 to nucleotide 1072;
 - (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BO365_2 deposited with the ATCC under accession number 98196;
 - 20 (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BO365_2 deposited with the ATCC under accession number 98196;
 - (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BO365_2 deposited with the ATCC under accession number 98196;
 - 25 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BO365_2 deposited with the ATCC under accession number 98196;
 - (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:19;
 - (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:19 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:19;
 - 30 (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
 - (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
 - 35

and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:14;

(bb) SEQ ID NO:15;

(bc) SEQ ID NO:17, but excluding the poly(A) tail at the 3' end of SEQ ID NO:17; and

(bd) the nucleotide sequence of the cDNA insert of clone BO71_1 deposited with the ATCC under accession number 98196;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:14, SEQ ID NO:15, and SEQ ID NO:17, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:14 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:17, but excluding the poly(A) tail at the 3' end of SEQ ID NO:17. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:15, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:15 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:15. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:15 from nucleotide 459 to nucleotide 539, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:15 from nucleotide 459 to nucleotide 539, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:15 from nucleotide 459 to nucleotide 539.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:16;

(b) a fragment of the amino acid sequence of SEQ ID NO:16, the fragment comprising eight contiguous amino acids of SEQ ID NO:16; and

(k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and

(l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:15.

5 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:15 from nucleotide 459 to nucleotide 539; the nucleotide sequence of the full-length protein coding sequence of clone BO71_1 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone BO71_1 deposited with the
10 ATCC under accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BO71_1 deposited with the ATCC under accession number 98196. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:16 having biological activity, the fragment preferably
15 comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:16, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:16 having biological activity, the fragment comprising the amino acid sequence from amino acid 8 to amino acid 17 of SEQ ID NO:16.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
20 NO:15, SEQ ID NO:14, and SEQ ID NO:17.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X
25 SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:14;

(ab) SEQ ID NO:15;

(ac) SEQ ID NO:17, but excluding the poly(A) tail at the 3'
30 end of SEQ ID NO:17; and

(ad) the nucleotide sequence of the cDNA insert of clone
BO71_1 deposited with the ATCC under accession number 98196;

(ii) hybridizing said probe(s) to human genomic DNA in conditions
at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);
35

- (d) the amino acid sequence encoded by the cDNA insert of clone BL249_18 deposited with the ATCC under accession number 98196;
- the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:13 or the amino acid sequence of SEQ ID NO:13 from amino acid 3 to amino acid 102. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:13 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:13, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:13 having biological activity, the fragment comprising the amino acid sequence from amino acid 376 to amino acid 385 of SEQ ID NO:13.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:15;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:15 from nucleotide 459 to nucleotide 539;
- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BO71_1 deposited with the ATCC under accession number 98196;
- (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BO71_1 deposited with the ATCC under accession number 98196;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BO71_1 deposited with the ATCC under accession number 98196;
- (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BO71_1 deposited with the ATCC under accession number 98196;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:16;
- (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:16 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:16;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;

(ba) SEQ ID NO:12, but excluding the poly(A) tail at the 3' end of SEQ ID NO:12; and

(bb) the nucleotide sequence of the cDNA insert of clone BL249_18 deposited with the ATCC under accession number 98196;

5 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide
10 sequence corresponding to the cDNA sequence of SEQ ID NO:12, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:12 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:12, but excluding the poly(A) tail at the 3' end of SEQ ID NO:12. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:12 from nucleotide
15 2 to nucleotide 2290, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:12 from nucleotide 2 to nucleotide 2290, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:12 from nucleotide 2 to nucleotide 2290. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID
20 NO:12 from nucleotide 134 to nucleotide 2290, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:12 from nucleotide 134 to nucleotide 2290, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:12 from nucleotide 134 to nucleotide 2290. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA
25 sequence of SEQ ID NO:12 from nucleotide 1 to nucleotide 309, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:12 from nucleotide 1 to nucleotide 309, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:12 from nucleotide 1 to nucleotide 309.

In other embodiments, the present invention provides a composition comprising a protein,
30 wherein said protein comprises an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:13;

(b) the amino acid sequence of SEQ ID NO:13 from amino acid 3 to amino acid 102;

(c) a fragment of the amino acid sequence of SEQ ID NO:13, the fragment
35 comprising eight contiguous amino acids of SEQ ID NO:13; and

134 to nucleotide 2290; the nucleotide sequence of SEQ ID NO:12 from nucleotide 1 to nucleotide 309; the nucleotide sequence of the full-length protein coding sequence of clone BL249_18 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone BL249_18 deposited with the ATCC under
 5 accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BL249_18 deposited with the ATCC under accession number 98196. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:13 from amino acid 3 to amino acid 102. In further preferred embodiments, the present
 10 invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:13 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:13, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:13 having biological activity, the fragment comprising the amino acid sequence from amino
 15 acid 376 to amino acid 385 of SEQ ID NO:13.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:12.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 20 (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:12, but excluding the poly(A) tail at the 3'
 - 25 end of SEQ ID NO:12; and
 - (ab) the nucleotide sequence of the cDNA insert of clone BL249_18 deposited with the ATCC under accession number 98196;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 30 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group
 35 consisting of:

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:12;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:12
5 from nucleotide 2 to nucleotide 2290;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:12
from nucleotide 134 to nucleotide 2290;
- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:12
from nucleotide 1 to nucleotide 309;
- 10 (e) a polynucleotide comprising the nucleotide sequence of the full-length
protein coding sequence of clone BL249_18 deposited with the ATCC under accession
number 98196;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA
insert of clone BL249_18 deposited with the ATCC under accession number 98196;
- 15 (g) a polynucleotide comprising the nucleotide sequence of a mature protein
coding sequence of clone BL249_18 deposited with the ATCC under accession number
98196;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert
of clone BL249_18 deposited with the ATCC under accession number 98196;
- 20 (i) a polynucleotide encoding a protein comprising the amino acid sequence
of SEQ ID NO:13;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino
acid sequence of SEQ ID NO:13 having biological activity, the fragment comprising eight
contiguous amino acids of SEQ ID NO:13;
- 25 (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h)
above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i)
or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of
30 the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of
the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the
length of SEQ ID NO:12.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:12
35 from nucleotide 2 to nucleotide 2290; the nucleotide sequence of SEQ ID NO:12 from nucleotide

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:10, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:10 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:10, but excluding the poly(A) tail at the 3' end of SEQ ID NO:10. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:10 from nucleotide 302 to nucleotide 1762, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:10 from nucleotide 302 to nucleotide 1762, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:10 from nucleotide 302 to nucleotide 1762. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:10 from nucleotide 389 to nucleotide 1762, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:10 from nucleotide 389 to nucleotide 1762, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:10 from nucleotide 389 to nucleotide 1762. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:10 from nucleotide 1723 to nucleotide 2050, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:10 from nucleotide 1723 to nucleotide 2050, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:10 from nucleotide 1723 to nucleotide 2050.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:11;
- (b) a fragment of the amino acid sequence of SEQ ID NO:11, the fragment comprising eight contiguous amino acids of SEQ ID NO:11; and
- (c) the amino acid sequence encoded by the cDNA insert of clone BL187_4 deposited with the ATCC under accession number 98196;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:11. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:11 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:11, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:11 having biological activity, the fragment comprising the amino acid sequence from amino acid 238 to amino acid 247 of SEQ ID NO:11.

provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:11 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:11, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:11 having biological activity, the fragment comprising the amino acid sequence from amino acid 238 to amino acid 247 of SEQ ID NO:11.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:10.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (aa) SEQ ID NO:10, but excluding the poly(A) tail at the 3' end of SEQ ID NO:10; and

- (ab) the nucleotide sequence of the cDNA insert of clone BL187_4 deposited with the ATCC under accession number 98196;

- (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

- (iii) isolating the DNA polynucleotides detected with the probe(s);

and

- (b) a process comprising the steps of:

- (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

- (ba) SEQ ID NO:10, but excluding the poly(A) tail at the 3' end of SEQ ID NO:10; and

- (bb) the nucleotide sequence of the cDNA insert of clone BL187_4 deposited with the ATCC under accession number 98196;

- (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

- (iii) amplifying human DNA sequences; and

- (iv) isolating the polynucleotide products of step (b)(iii).

- (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:10 from nucleotide 1723 to nucleotide 2050;
- (e) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BL187_4 deposited with the ATCC under accession number 98196;
- (f) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BL187_4 deposited with the ATCC under accession number 98196;
- (g) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BL187_4 deposited with the ATCC under accession number 98196;
- (h) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BL187_4 deposited with the ATCC under accession number 98196;
- (i) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:11;
- (j) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:11 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:11;
- (k) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(h) above;
- (l) a polynucleotide which encodes a species homologue of the protein of (i) or (j) above ;
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j); and
- (n) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(j) and that has a length that is at least 25% of the length of SEQ ID NO:10.

Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:10 from nucleotide 302 to nucleotide 1762; the nucleotide sequence of SEQ ID NO:10 from nucleotide 389 to nucleotide 1762; the nucleotide sequence of SEQ ID NO:10 from nucleotide 1723 to nucleotide 2050; the nucleotide sequence of the full-length protein coding sequence of clone BL187_4 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone BL187_4 deposited with the ATCC under accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BL187_4 deposited with the ATCC under accession number 98196. In further preferred embodiments, the present invention

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:6, SEQ ID NO:7, and SEQ ID NO:9, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:6 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:9, but excluding the poly(A) tail at the 3' end of SEQ ID NO:9. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:7, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:7 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:7. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:7 from nucleotide 206 to nucleotide 391, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:7 from nucleotide 206 to nucleotide 391, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:7 from nucleotide 206 to nucleotide 391.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:8;
- (b) a fragment of the amino acid sequence of SEQ ID NO:8, the fragment comprising eight contiguous amino acids of SEQ ID NO:8; and
- (c) the amino acid sequence encoded by the cDNA insert of clone BG241_1 deposited with the ATCC under accession number 98196;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:8. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:8 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:8, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:8 having biological activity, the fragment comprising the amino acid sequence from amino acid 26 to amino acid 35 of SEQ ID NO:8.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:10;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:10 from nucleotide 302 to nucleotide 1762;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:10 from nucleotide 389 to nucleotide 1762;

sequence of SEQ ID NO:8 having biological activity, the fragment comprising the amino acid sequence from amino acid 26 to amino acid 35 of SEQ ID NO:8.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:7, SEQ ID NO:6, and SEQ ID NO:9.

5 Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

(a) a process comprising the steps of:

(i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(aa) SEQ ID NO:6;

(ab) SEQ ID NO:7;

(ac) SEQ ID NO:9, but excluding the poly(A) tail at the 3' end of SEQ ID NO:9; and

(ad) the nucleotide sequence of the cDNA insert of clone BG241_1 deposited with the ATCC under accession number 98196;

(ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and

(iii) isolating the DNA polynucleotides detected with the probe(s);

20 and

(b) a process comprising the steps of:

(i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:

(ba) SEQ ID NO:6;

(bb) SEQ ID NO:7;

(bc) SEQ ID NO:9, but excluding the poly(A) tail at the 3' end of SEQ ID NO:9; and

(bd) the nucleotide sequence of the cDNA insert of clone BG241_1 deposited with the ATCC under accession number 98196;

(ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;

(iii) amplifying human DNA sequences; and

(iv) isolating the polynucleotide products of step (b)(iii).

- (c) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BG241_1 deposited with the ATCC under accession number 98196;
- 5 (d) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BG241_1 deposited with the ATCC under accession number 98196;
- (e) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BG241_1 deposited with the ATCC under accession number 98196;
- 10 (f) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BG241_1 deposited with the ATCC under accession number 98196;
- (g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:8;
- 15 (h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:8 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:8;
- (i) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(f) above;
- (j) a polynucleotide which encodes a species homologue of the protein of (g) or (h) above ;
- 20 (k) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h); and
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(h) and that has a length that is at least 25% of the length of SEQ ID NO:7.
- 25 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:7 from nucleotide 206 to nucleotide 391; the nucleotide sequence of the full-length protein coding sequence of clone BG241_1 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone BG241_1 deposited with the ATCC under accession number 98196. In other preferred embodiments, the polynucleotide
- 30 encodes the full-length or a mature protein encoded by the cDNA insert of clone BG241_1 deposited with the ATCC under accession number 98196. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:8 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ
- 35 ID NO:8, or a polynucleotide encoding a protein comprising a fragment of the amino acid

a nucleotide sequence corresponding to the 5' end of SEQ ID NO:4 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:4, but excluding the poly(A) tail at the 3' end of SEQ ID NO:4. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:4 from nucleotide 192 to nucleotide 2318, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:4 from nucleotide 192 to nucleotide 2318, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:4 from nucleotide 192 to nucleotide 2318. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:4 from nucleotide 653 to nucleotide 825, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:4 from nucleotide 653 to nucleotide 825, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:4 from nucleotide 653 to nucleotide 825.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- (a) the amino acid sequence of SEQ ID NO:5;
- (b) the amino acid sequence of SEQ ID NO:5 from amino acid 148 to amino acid 240;
- (c) a fragment of the amino acid sequence of SEQ ID NO:5, the fragment comprising eight contiguous amino acids of SEQ ID NO:5; and
- (d) the amino acid sequence encoded by the cDNA insert of clone BD335_14 deposited with the ATCC under accession number 98196;

the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:5 or the amino acid sequence of SEQ ID NO:5 from amino acid 148 to amino acid 240. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:5 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:5, or a protein comprising a fragment of the amino acid sequence of SEQ ID NO:5 having biological activity, the fragment comprising the amino acid sequence from amino acid 349 to amino acid 358 of SEQ ID NO:5.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:7;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:7 from nucleotide 206 to nucleotide 391;

sequence of SEQ ID NO:5 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:5, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:5 having biological activity, the fragment comprising the amino acid sequence from amino acid 349 to amino acid 358 of SEQ ID NO:5.

Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID NO:4.

Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- 10 (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 15 (aa) SEQ ID NO:4, but excluding the poly(A) tail at the 3' end of SEQ ID NO:4; and
 - (ab) the nucleotide sequence of the cDNA insert of clone BD335_14 deposited with the ATCC under accession number 98196;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - 20 (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - 25 (ba) SEQ ID NO:4, but excluding the poly(A) tail at the 3' end of SEQ ID NO:4; and
 - (bb) the nucleotide sequence of the cDNA insert of clone BD335_14 deposited with the ATCC under accession number 98196;
 - 30 (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:4, and extending contiguously from

- (d) a polynucleotide comprising the nucleotide sequence of the full-length protein coding sequence of clone BD335_14 deposited with the ATCC under accession number 98196;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA insert of clone BD335_14 deposited with the ATCC under accession number 98196;
- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone BD335_14 deposited with the ATCC under accession number 98196;
- (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone BD335_14 deposited with the ATCC under accession number 98196;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:5;
- (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:5 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:5;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:4.
- Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:4 from nucleotide 192 to nucleotide 2318; the nucleotide sequence of SEQ ID NO:4 from nucleotide 653 to nucleotide 825; the nucleotide sequence of the full-length protein coding sequence of clone BD335_14 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone BD335_14 deposited with the ATCC under accession number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone BD335_14 deposited with the ATCC under accession number 98196. In yet other preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:5 from amino acid 148 to amino acid 240. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid

ID NO:1 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:1. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:1 from nucleotide 282 to nucleotide 565, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:1 from nucleotide 282 to nucleotide 565, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:1 from nucleotide 282 to nucleotide 565. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:1 from nucleotide 342 to nucleotide 565, and extending contiguously from a nucleotide sequence corresponding to the 5' end of said sequence of SEQ ID NO:1 from nucleotide 342 to nucleotide 565, to a nucleotide sequence corresponding to the 3' end of said sequence of SEQ ID NO:1 from nucleotide 342 to nucleotide 565.

In other embodiments, the present invention provides a composition comprising a protein, wherein said protein comprises an amino acid sequence selected from the group consisting of:

- 15 (a) the amino acid sequence of SEQ ID NO:2;
 - (b) a fragment of the amino acid sequence of SEQ ID NO:2, the fragment comprising eight contiguous amino acids of SEQ ID NO:2; and
 - (c) the amino acid sequence encoded by the cDNA insert of clone AX65_22 deposited with the ATCC under accession number 98196;
- 20 the protein being substantially free from other mammalian proteins. Preferably such protein comprises the amino acid sequence of SEQ ID NO:2. In further preferred embodiments, the present invention provides a protein comprising a fragment of the amino acid sequence of SEQ ID NO:2 having biological activity, the fragment preferably comprising eight (more preferably twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:2, or a protein comprising
- 25 a fragment of the amino acid sequence of SEQ ID NO:2 having biological activity, the fragment comprising the amino acid sequence from amino acid 42 to amino acid 51 of SEQ ID NO:2.

In one embodiment, the present invention provides a composition comprising an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:4;
- 30 (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:4 from nucleotide 192 to nucleotide 2318;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:4 from nucleotide 653 to nucleotide 825;

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Further embodiments of the invention provide isolated polynucleotides produced according to a process selected from the group consisting of:

- (a) a process comprising the steps of:
 - (i) preparing one or more polynucleotide probes that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (aa) SEQ ID NO:1;
 - (ab) SEQ ID NO:3, but excluding the poly(A) tail at the 3' end of SEQ ID NO:3; and
 - (ac) the nucleotide sequence of the cDNA insert of clone AX65_22 deposited with the ATCC under accession number 98196;
 - (ii) hybridizing said probe(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C; and
 - (iii) isolating the DNA polynucleotides detected with the probe(s);
- and
- (b) a process comprising the steps of:
 - (i) preparing one or more polynucleotide primers that hybridize in 6X SSC at 65 degrees C to a nucleotide sequence selected from the group consisting of:
 - (ba) SEQ ID NO:1;
 - (bb) SEQ ID NO:3, but excluding the poly(A) tail at the 3' end of SEQ ID NO:3; and
 - (bc) the nucleotide sequence of the cDNA insert of clone AX65_22 deposited with the ATCC under accession number 98196;
 - (ii) hybridizing said primer(s) to human genomic DNA in conditions at least as stringent as 4X SSC at 50 degrees C;
 - (iii) amplifying human DNA sequences; and
 - (iv) isolating the polynucleotide products of step (b)(iii).

Preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequences of SEQ ID NO:1 and SEQ ID NO:3, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ ID NO:1 to a nucleotide sequence corresponding to the 3' end of SEQ ID NO:3, but excluding the poly(A) tail at the 3' end of SEQ ID NO:3. Also preferably the polynucleotide isolated according to the above process comprises a nucleotide sequence corresponding to the cDNA sequence of SEQ ID NO:1, and extending contiguously from a nucleotide sequence corresponding to the 5' end of SEQ

- (f) a polynucleotide comprising the nucleotide sequence of a mature protein coding sequence of clone AX65_22 deposited with the ATCC under accession number 98196;
- 5 (g) a polynucleotide encoding a mature protein encoded by the cDNA insert of clone AX65_22 deposited with the ATCC under accession number 98196;
- (h) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:2;
- 10 (i) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:2 having biological activity, the fragment comprising eight contiguous amino acids of SEQ ID NO:2;
- (j) a polynucleotide which is an allelic variant of a polynucleotide of (a)-(g) above;
- (k) a polynucleotide which encodes a species homologue of the protein of (h) or (i) above ;
- 15 (l) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i); and
- (m) a polynucleotide that hybridizes under stringent conditions to any one of the polynucleotides specified in (a)-(i) and that has a length that is at least 25% of the length of SEQ ID NO:1.
- 20 Preferably, such polynucleotide comprises the nucleotide sequence of SEQ ID NO:1 from nucleotide 282 to nucleotide 565; the nucleotide sequence of SEQ ID NO:1 from nucleotide 342 to nucleotide 565; the nucleotide sequence of the full-length protein coding sequence of clone AX65_22 deposited with the ATCC under accession number 98196; or the nucleotide sequence of a mature protein coding sequence of clone AX65_22 deposited with the ATCC under accession
- 25 number 98196. In other preferred embodiments, the polynucleotide encodes the full-length or a mature protein encoded by the cDNA insert of clone AX65_22 deposited with the ATCC under accession number 98196. In further preferred embodiments, the present invention provides a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:2 having biological activity, the fragment preferably comprising eight (more preferably
- 30 twenty, most preferably thirty) contiguous amino acids of SEQ ID NO:2, or a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:2 having biological activity, the fragment comprising the amino acid sequence from amino acid 42 to amino acid 51 of SEQ ID NO:2.
- Other embodiments provide the gene corresponding to the cDNA sequence of SEQ ID
- 35 NO:1 and SEQ ID NO:3.

5 SECRETED PROTEINS AND POLYNUCLEOTIDES ENCODING THEM

BACKGROUND OF THE INVENTION

Technology aimed at the discovery of protein factors (including e.g., cytokines, such as lymphokines, interferons, CSFs and interleukins) has matured rapidly over the past decade. The
10 now routine hybridization cloning and expression cloning techniques clone novel polynucleotides
"directly" in the sense that they rely on information directly related to the discovered protein (i.e.,
partial DNA/amino acid sequence of the protein in the case of hybridization cloning; activity of
the protein in the case of expression cloning). More recent "indirect" cloning techniques such as
15 signal sequence cloning, which isolates DNA sequences based on the presence of a now well-
recognized secretory leader sequence motif, as well as various PCR-based or low stringency
hybridization cloning techniques, have advanced the state of the art by making available large
numbers of DNA/amino acid sequences for proteins that are known to have biological activity by
virtue of their secreted nature in the case of leader sequence cloning, or by virtue of the cell or
tissue source in the case of PCR-based techniques. It is to these proteins and the polynucleotides
20 encoding them that the present invention is directed.

SUMMARY OF THE INVENTION

In one embodiment, the present invention provides a composition comprising an isolated
polynucleotide selected from the group consisting of:

- 25 (a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1;
- (b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1
 from nucleotide 282 to nucleotide 565;
- (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1
 from nucleotide 342 to nucleotide 565;
- 30 (d) a polynucleotide comprising the nucleotide sequence of the full-length
 protein coding sequence of clone AX65_22 deposited with the ATCC under accession
 number 98196;
- (e) a polynucleotide encoding the full-length protein encoded by the cDNA
 insert of clone AX65_22 deposited with the ATCC under accession number 98196;

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